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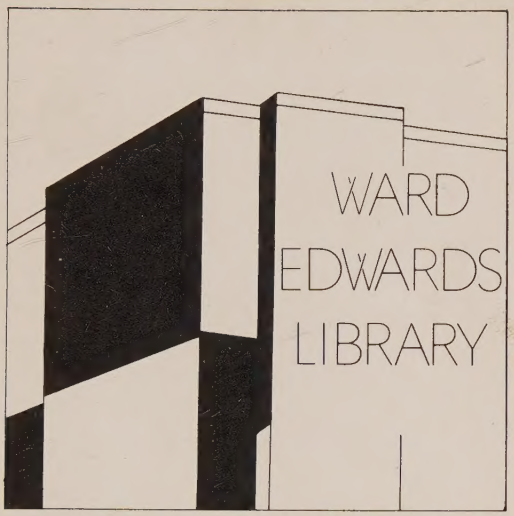

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THE TECHNIQUE OF CURRICULUM MAKING

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THE TECHNIQUE OF CURRICULUM MAKING

BY

HENRY HARAP, PH.D.

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PREFACE

THERE is a great need for continued study in the field of curriculum making. We must preclude the development of an attitude of complacency, which unfortunately has already set in. The work thus far has been largely of a pioneer nature. We have not yet entirely cleared the woods.

Very few curriculum studies are complete and coherent projects. The absence of a completely organized methodology has left curriculum revision to individual ingenuity, with the effect that many misguided products have gained wide currency. We do not find fault with these fragmentary beginnings. It is characteristic of a new movement involving so many complex factors. The work of the pioneers is praiseworthy, but from now on we must become more exacting. It is the purpose of this book to aid in the development of a sound technique of curriculum making.

This is not a theoretical treatise. It developed as a result of actual experience in making courses of study. The actual steps in the process were recorded and later became the basis of the instructional material presented here. The illustrations are drawn from actual curriculum investigations and courses of study. There is not a single step in the technique proposed here for which a pragmatic illustration cannot be found.

The material has been tried with over a dozen graduate and undergraduate classes of mature students. In fact, the book is organized into approximately sixty meetings with

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detailed directions for individual and class work. This arrangement, however, does not prevent the user from adapting the contents to his special needs.

This is an interpretative work as well as an expository work: that is, the book does not merely report how curricula are being made, but it attempts to evaluate them as well. It takes a position wherever there is a controversy or where one is obliged to choose from several proposed procedures. Two chapters are devoted exclusively to a summary and critique of the existing productive work. However, the material is so organized at every successive step as to induce the student to arrive at independent principles, policies, and procedures.

Special pains were taken to include a complete list of curriculum studies which are classified, first, by method of investigation, and second, by subject. The reader will recognize an attempt to introduce order into a field which is sadly confused.

This is a work book, not merely a reading book. It is intended that the student shall actually perform the steps which are outlined. He should have the same experiences in abridged form which curriculum makers actually have. Only by such procedure can the student prepare himself to apply the practical technique of curriculum making. The assignments throughout are arranged by subjects, making it possible for each person to become familiar with the whole literature of curriculum making in his special field and to train himself for curriculum work for that field.

I am grateful to Dr. Charles W. Hunt, Dean of the Cleveland School of Education, for making an opportunity for me to present this material to my classes; to many of my students whose ideas I have freely adopted; to Dr. Douglas Waples who took the pains to read the first draught of this material and to make suggestions which I have followed;

to Miss Florence A. Stratemeyer and Dr. Herbert B. Bruner for the courtesy of their busy office of curriculum research at Teachers College, Columbia University, and for their valuable collection of courses of study.

HENRY HARAP

January, 1928.

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PART I

CLEARING THE GROUND FOR CURRICULUM MAKING

THE TECHNIQUE OF CURRICULUM MAKING

FIRST MEETING

THE PLAN OF THE COURSE

The Aim of the Course

It is the aim of this course in the *Technique of Curriculum Making* to help students to make a new course of study, to revise a course of study, to evaluate a course of study, and to interpret intelligently the extensive revision of curricula which is now in progress.

The Method of the Course

The method of this course is to familiarize the student with the steps one actually needs to take in making or revising a course of study. First, each step is analyzed and discussed. Second, the student studies existing curricular material which concerns the step under consideration. Third, the student is given one or more actual problems which give him an opportunity to carry out each step independently.

The course is arranged by meetings, the assignment for each being given clearly and fully. When the latter is not an exercise, the student is expected to read at least one reference and to be prepared to contribute the result of his reading to class discussion. A set of questions is furnished to guide the discussion. Whenever the student makes a report which can be followed most conveniently with the help of a written

statement, he is expected to furnish enough copies (usually typed) for all the members of the class.

Throughout the entire course, it is possible for the student to limit himself to his particular field. Whenever the references are not generally applicable, they are listed by subjects, making it possible for the student to select the references in his special field.

At the conclusion of the course, the student is expected to have collected a bibliography of the curriculum investigations in his own field, and to have familiarized himself with it to a considerable degree. He is expected, also, to be able to make a practical plan of curriculum revision.

Books Most Frequently Referred to in This Course

To help the student to select the books which he may want to purchase, we give a list which includes those books which are referred to at least twice. A university or teacher's college library should purchase all the works listed below. This list is in the order of importance.

Department of Superintendence — *Second Yearbook; Third Yearbook; Fourth Yearbook; Fifth Yearbook.*

Charters, W. W. — *Curriculum Construction*, Macmillan, 1923.

Curtis, F. D. — *Investigations in the Teaching of Science*, Blackiston, 1926.

Bobbitt, F. — *How to Make a Curriculum*, Houghton Mifflin, 1923.

National Society for the Study of Education — *Twenty-Sixth Yearbook*, Pt. I and II, Public School Publishing Company, 1926.

National Education Association — "Keeping Pace with the Advancing Curriculum"; *Research Bulletin*, Vol. III, No. 4 and 5.

Bonser, F. G. — *The Elementary School Curriculum*, Macmillan, 1921.

Salisbury, E. I. — *An Activity Curriculum*, Harr Wagner, 1924.
Schorling, R. — *A Tentative List of Objectives in the Teaching of Junior High School Mathematics*, Wahr, 1925.
Bobbitt, F. — *Curriculum Investigations*, University of Chicago Press, 1926.
Wells, M. E. — *A Project Curriculum*, Lippincott, 1921.
Burke, A. and Others — *A Conduct Curriculum*, Scribner, 1924.
Collings, E. — *An Experiment with a Project Curriculum*, Macmillan, 1923.
Harap, H. — *The Education of the Consumer*, Macmillan, 1924.
Keelor, K. L. — *Curriculum Studies in the Second Grade*, Teachers College Bureau of Publications, 1925.
Guiler, W. S. — *Objectives and Activities in Arithmetic*, Rand McNally, 1926.
Counts, G. S. — *The Senior High School Curriculum*, University of Chicago Press, 1926.

SECOND MEETING

COMPOSING THE CURRICULUM COMMITTEE

Determine the composition of the curriculum committee.

When a superintendent of schools decides to revise a course of study, it is necessary for him to determine who shall do the job. He may turn the work over to one of the supervisors. He may call in an outside specialist. He may organize a committee of supervisors. He may organize a committee of teachers, to be guided by an expert in curriculum construction. He may form a committee representing several branches of the educational service and call in an outside expert as a consultant from time to time. The several modes of composing a curriculum committee are discussed by a number of writers who have had practical experience along this line. The student will be obliged to read

what success these men have had with various types of curriculum-making groups and arrive at his own idea of what should determine the composition of a curriculum committee. For purposes of guidance, the following rules which should be observed in composing a curriculum-making group are proposed:

The group should consist of the most capable and most industrious persons who can do the job.

It should include persons who have the authority to call upon many teachers for assistance at any step of the process of revision.

The chairman of the group should have some knowledge of the technique of curriculum making.

The group should include the person who will be responsible for training the teachers who will carry on the new course of study.

It should include classroom teachers who will think in terms of actual conditions.

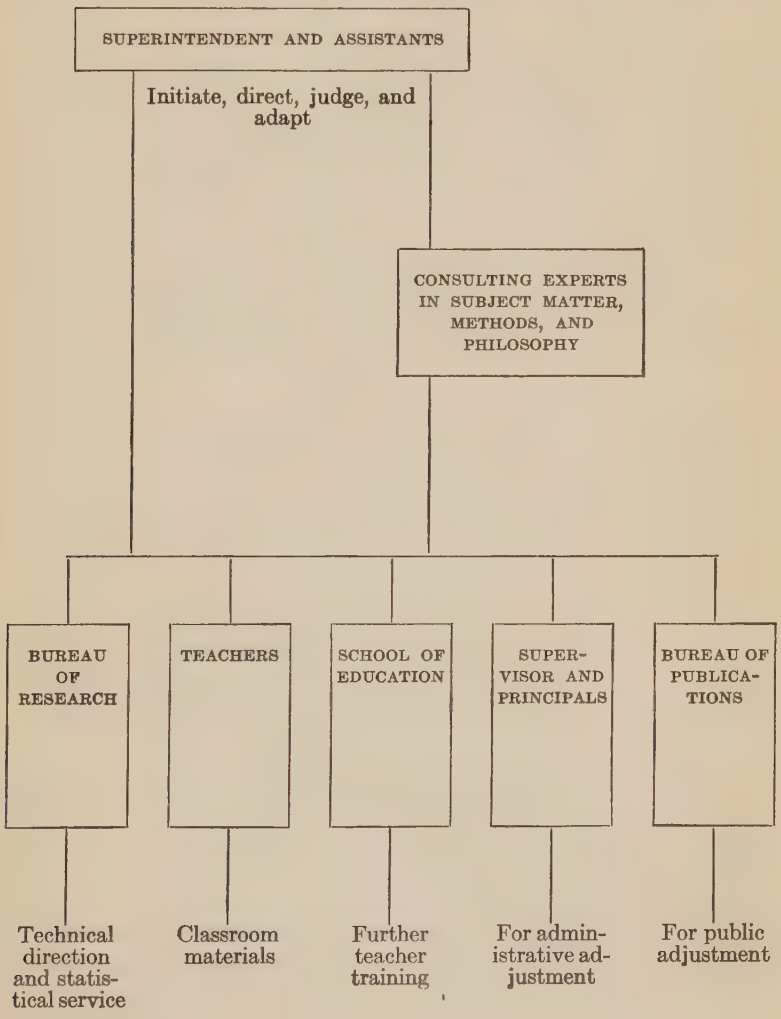
It should include principals and other supervisory officers who represent the administrative point of view.

The condition which is most frequently violated is the one which requires that the chairman of the group should have some knowledge of the technique of curriculum making. In general, many well-meaning but unsuited persons have been given the task of supervising curriculum revision. The result has been the production of courses of study which have been incomplete or faulty in some other way.

Also, there has been a failure to include the person who is to train the mass of teachers to use the new curriculum. In most cities, the training of teachers in service is delegated to the local training school or university. Therefore, the proper representative of that institution should belong to the curriculum-making group.

A SAMPLE OF THE COMPOSITION OF A CURRICULUM-MAKING GROUP

(According to the Research Bureau of the Cleveland Board of Education. W. G. Connor, Director.)



Assignment

Read as many of the following references as you can within a reasonable amount of time. Among other things look for the following information and submit in writing:

Who is at the head of the curriculum-making group?

What branches of the educational service are represented in the personnel of the curriculum-making body?

What provision is there for expert guidance?

What part do the teachers play in the program of curriculum revision?

Describe the personnel of a curriculum-revision committee for a specific situation with which you are familiar. Be prepared to justify your choice of committee members.

Readings

Counts, G. S. — "Who Shall Make the Curriculum?" *School Review*, May, 1927, pp. 332–339.

Department of Superintendence — *Second Yearbook*, pp. 111–125. The Denver program is given on pp. 118–120. The Cincinnati program is given on p. 121.

Fenton, M. M. — "Curriculum Building in Seattle"; *The Elementary English Review*, March, 1926, pp. 91–94.

Foster, C. R. — "Teacher Participation in Curriculum Making in Secondary Education"; *Chicago School Journal*, December, 1925, pp. 142–145.

Horn, E. — "Who Shall Make the Course of Study and How?" *Addresses and Proceedings of the National Education Association*, 1923, pp. 971–974.

Keller, P. G. W. — "Rebuilding of a Course of Study"; *School Review*, January, 1924, pp. 49–52.

Kyte, G. C. — "The Coöperative Development of a Course of Study"; *Educational Administration and Supervision*, December, 1923, pp. 517–536.

MINOR, R. — "Making the Course of Study"; *Elementary School Journal*, May, 1922, pp. 655–664.

MONROE, W. S. — *Making a Course of Study;* University of Illinois Bulletin, Educational Research Circular No. 35, pp. 13–17.

NATIONAL EDUCATION ASSOCIATION — "Keeping Pace with the Advancing Curriculum"; *Research Bulletin*, Vol. III, No. 4 and 5, pp. 119–124.

SALISBURY, E. I. — "The Construction of a Course of Study"; *Educational Administration and Supervision*, October, 1920, pp. 381–387.

STRONG, E. K. AND UHRBROCK, R. S. — *Job Analysis and the Curriculum*, 1923, pp. 72–73.

THRELKELD, A. L. — "Curriculum Revision: How a City May Attack the Problem"; *Elementary School Journal*, April, 1925, pp. 573–582.

THIRD MEETING

DEFINING THE AIM OF EDUCATION AND THE TERM *CURRICULUM*

Agree on the aim of education.
Agree on the definition of the curriculum.

It is not for academic reasons that the committee of curriculum makers need to discuss and to get some agreement on the general aim of education and the nature of the curriculum. Let us take a practical illustration to show how a curriculum is completely dominated by the predetermined aim of education. Very early in Bobbitt's *How to Make a Curriculum* appears this statement: "Education is to prepare men and women for the activities of every kind which make up, or which ought to make up, well-rounded adult life: it has no other purpose; everything should be done

with a view to this purpose; nothing should be included which does not serve this purpose."[1] It is not surprising, therefore, to find later that he would have the pupil engage in activities which will develop the ability to sell, or dispose of, his automobile profitably. Such an activity does not appear in the curriculum designed by Meriam who very early in his *Child Life and the Curriculum* states that the aim of education is "to help boys and girls to do better in all those wholesome activities in which they normally engage."

In *An Activity Curriculum*, by Salisbury, we find another viewpoint on the aim of education. "The objective of all education is to help the individual to help himself to grow aright. He gains in ability to grow through experience, activity, interest. He learns to do by whole-souled doing. There can be no growth apart from self-activity." The emphasis here is upon growth which results from whole-hearted activity. An examination of the curriculum reveals such an activity as looking for trapdoor spiders and studying their habits of living. Such an activity would not occur in a Bobbitt curriculum at all and, very likely, not in the Meriam curriculum.

For our purposes we find it helpful to assume that the aim of education is to help the person to do well those things which he most likely will need[2] to do. It is clear from this statement that, in the new curriculum, nothing will be included which is not useful in life; that what is included is done so with some assurance of its common occurrence in life; that what is included is done so in anticipation of improvement in the ways of living; and that what is included is to be useful not only in the present but also in the future.

While there is pretty general agreement on the meaning of a curriculum among educational leaders, there is still a

[1] Since then Dr. Bobbitt has changed his position.

[2] The term *need* should be interpreted broadly. Its exact meaning will be developed as we proceed.

common misconception among the mass of teachers. The curriculum consists of all the experiences that all the children are most likely to have. Bobbitt conveys the same idea in these words: "The objectives are the goals of growth. The pupil's activities and experiences are the steps which make up his journey toward these goals. The activities and experiences are the curriculum." Bonser expresses the same thought in these words: "The curriculum represents the experiences in which pupils are expected to engage in school." This conception of the curriculum does not exclude the formal subjects. It regards them as one of several means used in carrying on activities. It should be clear, however, that the curriculum is not a statement of topics to be studied, read, or recited. It is an account of all that children do in school to achieve certain pre-determined purposes.

Obviously, it is impossible to incorporate in a printed document all the experiences children should have in school. At best, the previously prepared plan is a fairly inclusive account of what will most likely, but not certainly, happen in school. Usually, the experiences proposed are those which have worked out satisfactorily in actual school situations. Sometimes, a pioneering curriculum is a judicious proposal of new experiences. But even they, in the long run, should be retained only if actual experiment proves their effectiveness.

Assignment

The following questions will form the basis of class discussion. Read at least one of the references which follow and as many others as you can. At the conclusion of your reading, submit in writing a workable aim of education and a definition of the curriculum. Also, answer the following questions in writing.

What, in your opinion, is the aim of education?

In what respect will the aim of education influence the curriculum?

Do the leading educational thinkers differ on the aim of education?

What present aim dominates the curriculum?

Is it possible to proceed from general aims to specific school activities? (Charters, *Curriculum Construction*, p. 7.)

What is the curriculum?

What is the traditional conception of the curriculum?

How were curricula made in the past?

Readings

Bobbitt, F. — *How to Make a Curriculum*, pp. 7–11, Houghton Mifflin, 1923.

Bonser, F. G. — *The Elementary School Curriculum*, Ch. 1, Macmillan, 1921.

Charters, W. W. — *Curriculum Construction*, Ch. 1 and 2, Macmillan, 1923.

—— "Practical Revision of the Curriculum"; *New Republic*, November 12, 1924.

Kilpatrick, W. H. — *Foundations of Method*, Ch. 16, 17, Macmillan, 1925.

Meriam, J. L. — *Child Life and the Curriculum*, Ch. 2, 3, 4, World Book Company, 1921.

National Education Association — "Keeping Pace with the Advancing Curriculum"; *Research Bulletin*, September and November, 1925, No. 4 and 5, pp. 114–115.

National Society for the Study of Education — *Twenty-Second Yearbook*, Pt. 2, Ch. 4.

FOURTH MEETING

OUTLINING ONE'S POSITION ON IMPORTANT ISSUES IN CURRICULUM MAKING

Lay down a few principles showing your position on the most important fundamental issues in curriculum making.

In making or revising a course of study in any field, one is confronted by several major issues, already existing, which affect the curriculum. For the sake of clearing the situation and avoiding inconsistencies later, it is necessary to set down one's position on these issues at the start. This is usually done by a brief introductory statement of principles to which the curriculum maker adheres. There is a temptation to make these statements wordy, learned, and protracted. The practical, honest curriculum maker will include only such principles as will actually make a difference in the course of study.

As an example of the issues to be met, there has been a division of curriculum makers into two camps, the first believing that it is necessary to analyze child nature, and the second, that it is necessary to analyze social needs, emphasizing adult social needs. On this issue, it is possible to take one of three positions. Obviously, the position that one takes should be the result of considerable thought, for it will have a deep-seated influence on the subsequent steps in making the curriculum.

The following questions will suggest some of the possible issues upon which the student may formulate his principles:

Is the present organization of the curriculum necessarily fixed and final?

Has there been any tendency to reorganize the school subjects?

Should the curriculum be organized as a series of projects?

Should the curriculum be organized for individual instruction?

Should the curriculum be made by experts? By teachers? By both?

In what sense should the curriculum consist of useful experiences?

Should the curriculum prepare for an improved order of society?

Should the curriculum prepare for adult needs? Child needs? Both?

Should the curriculum include a consideration of controversial situations?

Should the specific goals of school activity be determined in advance?

Should the curriculum be a preparation for the immediately higher school?

ILLUSTRATION OF A BRIEF STATEMENT OF PRINCIPLES [1]

PRINCIPLES UPON WHICH THE COURSE OF STUDY IS BASED

1. Only that content is included which functions frequently in the life of the child. This means that many needlessly long numbers or examples, heretofore used for drill purposes, are omitted in the fundamental processes in integers, common and decimal fractions, measurements, and percentage. It likewise means the exclusion of topics and phases of topics found to be rarely demanded in real life situations.

2. A course of study to be effective must be definite in its inclusions. For example, the teacher needs to know, within the minimum essentials, not only what subjects, but also what combinations of those subjects may be best taught in the grade in which she is teaching.

[1] Baltimore Department of Education — *Arithmetic, Course of Study for Grades Four, Five, and Six*, 1924, pp. 9–10.

3. The problems in arithmetic, first, must arise in real situations, second, must involve a knowledge of only such processes as the child has learned, and third, must avoid a test of linguistic ability.

4. Accuracy and speed being two of the main purposes of teaching the fundamental operations in arithmetic, provision is made for drill which grows out of the child's realization of his need and his intrinsic interest in the work at hand.

5. In the grades, efficiency, as expressed by (a) quick adaptation to arithmetical situations, (b) reasonable speed of computation, and (c) 100 per cent accuracy, is a most important desideratum. Any course of study in arithmetic to be effective must provide for this efficiency.

Assignment

The class discussion will be based upon the foregoing questions and will include a discussion of the principles arrived at by several members of the class. Read one or more of the general references to become acquainted with some of the major issues in curriculum making. Set down as many of them as you can. Then, proceed to set down a few fundamental principles, which have led to your stand, showing your position on the most important fundamental issues in curriculum making. Submit in writing the major issues and the fundamental principles which have influenced your attitude.

Readings

Bobbitt, F. — *How to Make a Curriculum*, pp. 7–11, Houghton Mifflin, 1923.

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McMurry, C. E. — *How to Organize the Curriculum*, Ch. 2, especially pp. 26, 29, 30, 40, Macmillan, 1923.

Meriam, J. L. — *Child Life and the Curriculum*, Ch. 8, p. 277, World Book Company, 1921.

Mossman, L. C. — "An Analysis of the Theories Basic to Curriculum Construction"; *Teachers College Record*, May, 1925, pp. 734–739.

National Society for the Study of Education — "The Foundations of Curriculum Making"; *The Twenty-Sixth Yearbook*, Pt. II, Ch. 1, pp. 9–10.

—— "Curriculum-making: Past and Present"; *The Twenty-sixth Yearbook*, Pt. I, pp. 242–243, 293–295, 299–301.

Rugg, H. — "A Preface to the Reconstruction of the American School Curriculum"; *Teachers College Record*, March, 1926, pp. 600–616.

Salisbury, E. I. — *An Activity Curriculum*, pp. 3–32, Harr Wagner, 1924.

SCHORLING, R. — *A Tentative List of Objectives in the Teaching of Junior High School Mathematics*, Ch. 2, Wahr, 1925.
SCOTT, R. R. — "Specific Objectives Versus Adaptability as the Aim of Education"; *Education*, March, 1927, pp. 414–417.

FIFTH MEETING

SELECTING A FIELD FOR STUDY

Determine the major fields of life activity and select one for study. Or, select a present formal subject for revision.

Curriculum revision may be approached in two ways. The group may choose to work on a major field of life or on a present formal subject. Either approach raises several problems which need to be solved.

Perhaps we ought to say a word, first, concerning the relative worth of these two methods of attack. There is no doubt that, all things being equal, the soundest approach is through the major fields of life activity. The conventional subject organization of the curriculum is artificial and arbitrary; it causes wasteful overlapping and it distorts rather than reproduces life. We find almost unanimous agreement among curriculum students on the matter. However, at the present stage of educational progress, we are convinced from contact with practical and rather liberal school people that it is still necessary to revise curricula with the present formal subjects as a starting point.

CURRICULUM REVISION VIA THE STUDY OF A MAJOR FIELD OF LIFE ACTIVITY

We have already indicated that the aim of education is to help persons to do well those things which they will most likely need to do. Therefore, for those who wish to begin

curriculum revision with the consideration of life activities, it is necessary to analyze life into its major fields of activity. Several good analyses have been proposed, following Herbert Spencer, and are given below as suggestions. Any group, however, may arrive at an independent classification.

Having divided life into its major activities, the curriculum maker chooses one of these activities for consideration. It is now necessary to define the scope of the chosen field. For example, the major activity of consumption of economic goods, after considerable thought, is limited to the selection, purchase, and use of the common commodities. It is decided to exclude the element of household finance and marketing, except as they occur incidentally in the treatment of the subject.

It should be remembered that a curriculum built upon an analysis of life activities will ultimately involve some classification with the major fields of activity as a basis. It is probable that the new alignment of studies will parallel the major life activities. There will be health studies, social studies, economic studies, language studies, etc. For example, it is not inconceivable that economic studies will emerge as one of the new *common branches* as the educational correlative of economic life. It will probably draw on industrial arts, household arts, economic geography economic history, and general occupational study. The social studies, thus far most intimately related to the economic studies, would probably include political and social history, the social phases of geography, citizenship, and ethics.

Recently, Bobbitt has undertaken to determine the major activities of life by an inductive study of the activities of society as reflected in periodicals, newspapers, encyclopedias, and the common vocabulary of people. He analyzed the topics listed in the *Reader's Guide to Periodical Literature*, which classifies the material printed in over a hundred of

the more important periodicals for the years 1919 to 1921. He made a count of the topics listed in one hundred eighty issues of the *New York Times*. He analyzed 14,740 columns of the *Encyclopedia Britannica*. He studied the topics apparently referred to in Thorndike's ten thousand most frequently used words. He analyzed the topics treated in the *Literary Digest* for the past twenty-five years. These five analyses yielded the major fields of human experience, including government, health, education, literature, vocations, etc.[1] Thus far, Bobbitt's procedure has not eventuated in a composite list of major fields of life which can replace his first organization of life into major activities given below. Eventually, these studies will undoubtedly result in a reclassification of major life activities together with an index of their relative importance which should result in a corresponding reorganization of the major branches of the curriculum.

* * * * * * * * *

THE MAJOR ACTIVITIES OF LIFE ACCORDING TO SPENCER

1. Those activities which directly minister to self-preservation
2. Those activities which, by securing the necessaries of life, indirectly minister to self-preservation
3. Those activities which have for their end the rearing and disciplining of offspring
4. Those activities which are involved in the maintenance of proper social and political relations
5. Those miscellaneous activities which fill up the leisure part of life, *i.e.*, devoted to the gratification of the tastes and feelings

[1] Bobbitt, F. — *Curriculum Investigations*, Ch. 1–6, University of Chicago Press, 1926.

THE MAJOR ACTIVITIES OF LIFE ACCORDING TO BOBBITT

1. Language activities; social intercommunication
2. Health activities
3. Citizenship activities
4. General social activities — meeting and mingling with others
5. Spare-time activities, amusements, recreations
6. Keeping one's self mentally fit — analagous to the health activities of keeping one's self physically fit
7. Religious activities
8. Parental activities, the upbringing of children, the maintenance of a proper home life
9. Unspecialized or non-vocational practical activities
10. The labors of one's calling

THE MAJOR ACTIVITIES OF LIFE ACCORDING TO SNEDDEN

1. Verbal communication, written or oral
2. Health conservation through habitual safeguarding practices
3. Health conservation dependent upon applied knowledge of technical hygiene
4. Health conservation through body development and exercise
5. Cultural participations
6. Moral (including fellowship) behaviors
7. Civic behaviors
8. Religious behaviors
9. Personal and household regimen (apart from vocational homemaking)
10. Vocational participations

THE MAJOR ACTIVITIES OF LIFE ACCORDING TO BONSER

1. Maintaining and preserving life and health through the use of the material necessities of life and the appropriate care of the body
2. Producing the necessities and luxuries for which man feels need and making these available through exchange
3. Coöperating with others in maintaining the protective and regulative measures for the common good, the institutions of life — the family, the state, the vocation, the school, and the church
4. Occupying leisure in pursuits engaged in for the enjoyment which they yield

THE MAJOR ACTIVITIES OF LIFE ACCORDING TO CHAPMAN AND COUNTS

1. Caring for the body
2. Rearing children
3. Securing economic necessities
4. Organizing for civic action
5. Engaging in recreation
6. Satisfying religious cravings

THE MAJOR ACTIVITIES OF LIFE ACCORDING TO THE COMMISSION ON THE REORGANIZATION OF SECONDARY EDUCATION

1. Health
2. Command of fundamental processes
3. Worthy home membership
4. Vocation
5. Citizenship
6. Worthy use of leisure
7. Ethical character

* * * * * * *

Curriculum Revision via the Study of a Formal School Subject

If one approaches the task of curriculum revision by choosing to revise a formal subject, he, too, needs to delimit his field. A committee at work on the curriculum of elementary science may choose to include animals, plants, and minerals or it may choose to eliminate one of them. It may choose to include or exclude the heavenly bodies, the science of industry, of transportation, etc. If one takes it for granted that a subject has arbitrary limits he is likely to be mistaken. In the field of social studies, for example, most courses draw heavily on geography, history, or civics. Some courses of study introduce nature study into the early grades. Others introduce social ethics, economic history, economic life, family life, community life, school life. The name of a course of study is no indication of its scope. For example, the *Chicago Course of Study in History for Grades IV to VI*, on examination, turned out to be social and civic life in three semesters, history in two semesters, and economic history in one semester.

The *Industrial Arts Course of Study*, issued by the State of Minnesota, furnishes an illustration of what is involved here.[1] Under the heading of *Definition of the Field*, there appears this statement:

> The present viewpoint has been derived from the philosophy of education which utilizes real life experiences for instructional purposes and makes of each schoolroom activity a sample of worthy life for the learner. Industrial arts, then, has become an actual study of industrial processes about the school and home.
>
> The course may utilize all the materials and processes formerly involved in primary handwork, construction work, manual train-

[1] State of Minnesota, Department of Education — *Curriculum for Elementary Schools*, January, 1923, p. 316.

ing, and sewing, at least through the first six grades of the elementary school; but the important materials for the course are organized about the ways and means whereby the great necessities of human life are secured: food, clothing, shelter, records, tools, machines, and utensils.

It should here be mentioned that there is considerable evidence of a tendency to consolidate several related subjects under one broad head. Examples of this tendency are the fusion of biology, chemistry, physics, and astronomy into general science; the fusion of history, geography civics, and economics into social studies; the fusion of arithmetic, algebra, geometry, and trigonometry into mathematics; the fusion of grammar, spelling, literature, and composition into language. The curriculum maker may wish to stop to ask himself whether he is ready to yield to this tendency to integrate subjects.

Assignment

Make a list of what you consider to be the major fields of life activity. Which of these fields is most closely related to your own department?

List the present, formal school subjects of the elementary school, junior high school, or senior high school.

Following present tendencies of consolidating subjects, regroup the present formal subjects to show the proposed new alignment of subjects. You may propose an original scheme.

What tendencies, if any, are there to change the subject organization in your especial field?

Define with some exactness the scope of your especial field, or any other you choose.

Submit answers to the foregoing in writing.

Questions for Discussion

What are the two possible approaches to curriculum reconstruction? Which do you favor? Why?

Do you feel that it is possible at this time to revise courses of study by analyzing major fields of life activity?

Which classification of the major fields of life activity do you prefer? Why?

In what respect do the more recent classifications depart from that of Herbert Spencer?

Can we get away entirely from some classification of school activities?

What will the basis of the new subjects be?

Why is it necessary to define the limits of a subject when engaged in revising it?

What evidence do we have of a tendency to consolidate related subjects under one broad head?

Readings

Bobbitt, F. — *Curriculum Investigations*, Ch. 1–6, University of Chicago Press, 1926.

—— *How to Make a Curriculum*, Ch. 2, Houghton Mifflin, 1923.

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United States Bureau of Education — *Cardinal Principles of Secondary Education;* Bulletin, 1918, No. 35.

Chapman, J. C. and Counts, G. S. — *Principles of Education*, Introduction to Pt. III, p. 194, Houghton Mifflin, 1924.

Charters, W. W. — *Curriculum Construction*, Ch. 5, Macmillan, 1923.

Clement, J. A. — *Curriculum Making in Secondary Schools*, Ch. 3, Holt, 1923.

Harap, H. — *The Education of the Consumer*, p. 11, Macmillan, 1924.

Jones, T. J. — *The Four Essentials of Education*, Scribner, 1926. The four essentials are (1) health and sanitation, (2) appre-

ciation and use of environment, (3) home and household, (4) recreation.

RUGG, H. — "A Preface to the Reconstruction of the American School Curriculum"; *Teachers College Record*, March, 1926, pp. 606–608.

SNEDDEN, D. — "Planning Curriculum Research"; *School and Society*, September 5, 1925, p. 289.

SPENCER, H. — *Essays on Education*, first essay, Appleton, 1914.

SIXTH MEETING

STATING ONE'S POSITION ON IMPORTANT ISSUES IN ONE'S SPECIAL FIELD

Lay down a few fundamental principles showing your position on the most important issues in your field.

A preceding meeting was devoted to the discussion of one's position on important fundamental issues in curriculum making in general. There are similar fundamental differences in opinion in any one field. It is equally necessary to state briefly a few principles which indicate the curriculum maker's position on the fundamental issues in his own field.

To illustrate, in the field of health education there are those who would separate physical exercise from health instruction and nutrition. If you do not take this view, you will set forth clearly in your introductory statement: "Health education is concerned with all school activities which contribute to physical development, including physical exercise, medical examination, follow-up work, nutrition, class instruction, games, etc."

To further illustrate, in the field of social studies there is a difference of opinion on the unification of history, geography, and civics. Consequently, the Connecticut State Board of Education, in its introductory statement to the

Course of Study in Social Studies, takes the position that the customary divisions of history, geography, and civics in Grades IV to VIII should be preserved.

In the field of elementary science, there are those who take the position that activities which are not directly usable in the performance of one's daily occupations should be excluded. However, there are several alternative positions. For example, "This course of study in elementary science proceeds on the assumption that school work shall not only help the pupil to do his daily work well, but that it shall also help him to enjoy his natural environment."

Assignment

Since the assumption is that the student is somewhat of a specialist in his field, there will be no difficulty in his finding the sources which discuss the fundamental issues in his field. Therefore, there is no reading list in connection with this meeting. Set down as many basic issues in your field as you can. Then, proceed to set down a few fundamental principles showing your position on the most important fundamental issues in your field. Submit in writing the major issues and the fundamental principles which guide you.

SEVENTH MEETING

AGREEING ON THE MEANING OF AN OBJECTIVE

The Meaning of an Objective

Determine the meaning of an objective and get some agreement as to its form.

We must now get ready to take the first actual step in making or revising a curriculum. We wish to determine the purposes to be achieved by the pupils. We shall call

the specific purposes of education *objectives* and, because there is always considerable misunderstanding concerning their nature and form, we shall pause to consider them in greater detail. This should be done by the curriculum-making group in the beginning in order that its members may speak the same language thereafter.

An educational objective is a specific goal, useful in life, to be achieved by education. It is the usable achievement which should result from any one unit of school work. It is what the pupil should be able *to do*, *to know*, or *to be* as a result of a given amount of learning. It is a specific usable skill, knowledge, or attitude which should be developed by school activity. It is a specific useful purpose of educational activity.

The term *useful*, emphasized deliberately in our definition of an objective, may be interpreted by each person in his own way. It has a broader meaning than some curriculum makers have attached to it. There has been a tendency to limit the term *useful* to the more obvious daily occupations and pursuits in the home, on the street, and in the market-place. A useful purpose is one which yields good results, one which makes some improvement in living. Anything is useful which gives wholesome pleasure, improves health, develops skill, helps one to get on with people, makes one economically productive, refines one's tastes, increases one's capacity to enjoy his environment, perfects one's ability to understand institutions, and so on. A useful life is a full life which does not neglect the expression of all the capacities, faculties, interests, and emotions of man.

Objectives are stated in four different ways, depending upon the introductory word. That word may be a noun, participle, verb, or infinitive. The last seems to be most satisfactory because it more nearly indicates the idea that there is a goal. Using all the forms promiscuously, as some

courses of study do, is a little confusing. Illustrations of the four forms are: *noun* — ability to compute simple interest; *participle* — making change in shopping; *verb* — make requests in polite manner; *infinitive* — to repair a leaky faucet. There is no fundamental difference in these four modes of expression. An objective may be stated in any of the four ways without changing its meaning.

The need for stating the specific useful goal of every teaching unit has not been universally recognized. The inclusion of any unit of teaching material is justifiable only if it points to the achievement of some specific, useful purpose which should be stated at the beginning of each unit of instruction.

Mistakes in the Use of Objectives

Some objectives are too general; there is a place for some general objectives, but they are few in number and only serve to show the direction of the work of one grade or of a complete course of study. The objectives for any one grade should anticipate the formation of rather specific habits, *e.g., to treat the members of the visiting team with hospitality.* Objectives should be so specific as to define with some exactness the scope of the teaching unit which is designed to achieve it. They should be so specific as to make it possible to measure their achievement. They should give us an idea of what to do in a fairly limited unit of school work.

In some cases objectives are expressed in terms of the teacher's goal, *e.g., to acquaint children with life on a cold desert.* In other cases, they are expressed in terms of the child's goal, *e.g., to know who Lincoln was.* The best practice in curriculum making is to express the objectives in terms of the child's goal. It centers the attention clearly on the goal of instruction which is to change the pupil's mode

of living. It anticipates that a definite achievement shall result from a given unit of work. An indiscriminate use of both forms indicates loose thinking.

IN TERMS OF THE CHILD'S GOAL	IN TERMS OF THE TEACHER'S GOAL
To tell time.	To teach children to tell time.
To read three-place decimals.	To teach children to read three-place decimals.
To take care of a rabbit.	To show the pupil how to take care of a rabbit.

There is a difference of opinion as to the term to use to designate what we have here called an objective. The following terms have been used: *objective*, *outcome*, *aim*, *specific aim*, *goal*. The term *outcome* differs from the term *objective* only in that it suggests the product instead of the goal. From the point of view of education they should be the same. The terms *aim* and *specific aim* should be discarded because they suggest general goals which in the past did not have much effect upon the actual teaching procedure. The term *objective* is most commonly used in the literature of curriculum making. The use of the term *outcome* encourages one to start with favorable teaching material and to be satisfied with listing the outcomes of that particular teaching material. Indeed, the authors of project curricula quite properly use the term *outcome* to describe the changes in conduct which result from activities initiated by pupils. The term objective implies that one must determine one's goals before proceeding to plan school activities.

Some objectives are organized under the headings of knowledge, skills, attitudes, and ideals. There is no advantage in this classification because it does not function in the

teaching or learning procedure. For example, *to develop a desire to perform personal service for others* gives us no idea of the nature of the activity resulting in the development of this so-called attitude.

When objectives have been given in connection with each specific teaching unit or activity unit, there is no harm in summarizing them by grades or topics or psychological terms, but the latter must always be an extra list and not the exclusive one. Schorling, in *A Tentative List of Objectives in the Teaching of Junior High School Mathematics*, gives a very comprehensive list of objectives arranged by topics such as home, investments, geometry. He makes no reference to attitudes or skills in the statement of objectives. In a brief paragraph at the end of his study, he states that the list includes nine attitudes, sixty-three concepts, one hundred twenty-seven abilities, and one hundred six items of information. This he gives merely as a comment, recognizing that the classification does not affect the course of study at all.

Assignment

In your own words, define an objective.

State several objectives in your own field to illustrate the form you approve and then describe the form in a phrase or sentence.

Give an illustration of an objective expressed in terms of the teacher's goal; in terms of the child's goal. Which do you favor? Why?

Give an example of an objective that is stated with sufficient exactness. Why should objectives be specific? Give an illustration of an objective that is too general and indicate what is wrong with it.

Select a set of objectives from the list given under Readings, and answer the following questions concerning it:

In what form are the objectives expressed?

Are the objectives expressed in terms of the pupil's or teacher's goal?

Are the objectives specific or general?

What term is used to denote an objective?

Are objectives organized by grades? Topics?

Are the objectives stated as a separate list or immediately before activities?

Submit answers to the foregoing in writing.

Readings

Bobbitt, F. — *How to Make a Curriculum*, Ch. 2, Houghton Mifflin, 1923.

Department of Superintendence — *Fourth Yearbook*, pp. 374–378.

Lists of Objectives

Language

Denver Public Schools — *Elementary Language, Course of Study*, Monograph No. 18, 1926, pp. 15–22.

Pendleton, C. S. — *The Social Objectives of School English*, published by the author, 1925.

Western State Normal Training Schools, Kalamazoo, Michigan, — *Course of Study in Reading and Literature.*

Mathematics

Guiler, W. S. — *Objectives and Activities in Arithmetic*, Rand McNally, 1926.

Reeve, W. D. — "Objectives in the Teaching of Mathematics"; *Mathematics Teacher*, November, 1925.

Schorling, R. S. — *A Tentative List of Objectives in the Teaching of Junior High School Mathematics*, Ch. 5, Wahr, 1925.

State Department of Education of Maryland — "Our Heritage in Arithmetic"; *The Journal of the National Education Association*, February, 1926, p. 62.

PRACTICAL ARTS

BONSER, F. G. AND MOSSMAN, L. C. — *Industrial Arts for Elementary Schools*, Macmillan, 1923. About three hundred outcomes are listed by grades.

SCIENCE

POWERS, E. R. — "The Objectives of High School Chemistry"; *School Science and Mathematics*, November, 1925, pp. 832–834.

SOCIAL STUDIES

CLEVELAND BOARD OF EDUCATION — *Course of Study in Geography.* Objectives are listed by grades.

DETROIT BOARD OF EDUCATION — *Course of Study in Social Science, Grades I to VI.* Objectives are listed by grades.

MONROE, W. S. AND HERRIOTT, M. E. — *Objectives of United States History in Grades VII and VIII;* University of Illinois Bulletin, Vol. XXIII, No. 3 (Bureau of Educational Research, Bulletin No. 33), 1926.

UPTON, S. M. AND CHASSELL, C. F. — *A Scale for Measuring the Importance of Habits of Good Citizenship*, pp. 21–27, Teachers College, 1921.

SEVERAL SUBJECTS

BOBBITT, F. — *How to Make a Curriculum*, Ch. 6–18, Houghton Mifflin, 1923.

BURKE, A. AND OTHERS — *A Conduct Curriculum*, pp. 75–86, Scribner, 1925.

DEPARTMENT OF SUPERINTENDENCE — *Fourth Yearbook*, Nature Study — chart opposite p. 72; Handwriting — pp. 113–116; Arithmetic — pp. 182–183; Language — pp. 251–281.

DYER, S. — "Objectives in the First Three Grades"; *Childhood Education*, April, 1926, pp. 384–391.

HARAP, H. — *The Education of the Consumer*, pp. 206–334, Macmillan, 1924.

LOS ANGELES CITY SCHOOL DISTRICT — *Course of Study, Fifth and Sixth Grades*, September 1, 1924. The objectives are

scattered through the course of study and are listed under the heading of outcomes.

St. Louis, Missouri, Public Schools — *Courses of Study.* In 1926 there appeared about forty courses of study, separately printed, every one of which contains specific objectives.

Salisbury, E. I. — *An Activity Curriculum,* pp. 8–20, 98–104; Harr Wagner, 1924.

PART II

DETERMINING OBJECTIVES FROM PRIMARY DATA

EIGHTH MEETING

DETERMINING THE EDUCATIONAL OBJECTIVES

Determine the objectives of education in your particular field of inquiry.

Having cleared up the meaning and the nature of an objective, we are ready to consider the several ways in which curriculum makers have gone about determining what the objectives in any particular field are. It will be remembered that an objective is a specific goal, useful in life, to be achieved by education. It follows that the specific useful goals in a field must result from some kind of an analysis of the particular portion of life which pertains to that field. For example, if we wish to determine the objectives of geography it is necessary to discover exactly what geographic facts or ideas occur in the life of the ordinary person. If we wish to determine the objectives of arithmetic it is necessary for us to discover what arithmetical calculations the average person needs to perform. If we wish to determine the objectives of domestic arts it is necessary for us to discover exactly what the average person should do in the home. If we wish to determine what the objectives of plumbing training are it is necessary for us to determine exactly what the plumber should be able to do.

Suppose you undertook to teach your friend, in a systematic way, to hang a picture. First, you would analyze the steps you have to take in hanging a picture. You would find that the process consists, roughly, of buying picture wire, screw hooks, moulding hooks; putting the screw hook into the wood; cutting the picture wire the right length;

attaching the picture wire to the screw hook; setting the moulding hook at the proper position; hanging the picture; and adjusting the picture. You would then be ready to teach your friend to hang a picture by directing him through the process, one step at a time. Similarly if you undertook to teach a person how to carry on any activity, mental or physical, it would be necessary for you to analyze that activity into its component parts. Each unit of your instructional process would have for its objective the mastery of one part of the process.

Most of the curriculum studies of the past few years have been concerned chiefly with such attempts to discover educational objectives. As we analyze the studies which have been made thus far we are able to distinguish five principal methods of determining objectives. Not all of them are of equal validity and not all of them are applicable to every situation. It is necessary to study and apply each of these methods before we become competent to determine their relative worth or their applicability to any situation. We shall, therefore, state the five methods of determining objectives and proceed immediately to consider the first.

THE CHIEF METHODS OF DETERMINING OBJECTIVES

1. Direct analysis of the natural activities of children
2. Direct analysis of the social needs of the learner
3. Secondary analysis of the needs of the learner
4. Analysis of the needs of the learner in the opinion of competent persons
5. Analysis of existing objectives as found in, or inferred from, curriculum studies, courses of study, and textbooks

The first method, direct analysis of the natural activities of children, may be divided into two classes: analyses that

are quantitative and those which are informal. The former is illustrated by Washburne's analysis of questions most frequently asked by children pertaining to natural phenomena. The latter is illustrated by the informal accounts of the natural activities which have been published as project curricula.

Of the second method, direct analysis of the social needs of the learner, we may distinguish three kinds: (1) analysis of life needs; (2) analysis of the needs of a homogeneous group ("case group"); and (3) analysis of industrial jobs. The first is illustrated by W. W. Charters' determination of the language errors actually made by the children of Kansas City. The second is illustrated by Clyde Moore's analysis of the civic deficiencies of middle-western farmers. The third is illustrated by Strong and Uhrbrock's analysis of the job of the printing executive.

The third method, secondary analysis of the needs of the learner, may be divided into two groups: (1) analysis of newspapers and magazines; (2) analysis of social surveys, social statistics, and other social documents. The first is illustrated by H. W. Adams' analysis of twenty-one newspapers and magazines to discover what arithmetical material they contain. The second is illustrated by B. B. Bassett's analysis of the platforms of political parties to determine a course of study in civics.

The fourth method, analysis of the needs of the learner in the opinion of competent persons, is illustrated by Bobbitt's collection of the opinions of his students over a period of ten years on what one should accomplish in school.

The fifth method, analysis of existing objectives, is illustrated by Raleigh Schorling's tentative list of objectives in mathematics for junior high schools obtained from curriculum studies, textbooks, and courses of study.

Determining Objectives by Direct Analysis of the Natural Activities of Children

The first method of determining objectives is to analyze children's activities, interests, or questions. The present application of this method has been, first, in the fields in which the aim is to develop good tastes or the ability to enjoy certain recreational pleasures. It is obvious that children's tastes should to a certain degree determine the poems they should read, the songs they should sing, the pictures they should discuss. To be sure, there should be some standards of style and subject matter, if they are ascertainable, but the interest and capacity of the child will determine whether the poems, songs, or pictures are suitable. In the past, we were satisfied that those stories, poems, songs, and pictures were best which adults selected. Recent investigations have corrected some of the erroneous judgments of adults.

Second, there have been several studies of children's interests in the field of elementary science. The first studies were simple attempts to discover whether children were most interested in plant, animal, or mineral matter. The most recent studies were made to determine the whole of a course of study in science.

Third, the interests and activities of children have been the basis of nearly all the so-called activity or project curricula, about a score of which have come to our attention. The assumption is that the educational process is one of growth, of enlarging interests and experiences, but always beginning with what is near to the child.

The analysis of children's activities is commonly considered to be opposed to analysis of social needs. There is really no antagonism between these two approaches to curriculum construction, as we shall presently try to show. They are not mutually exclusive; they are supplementary.

Child nature never displaces social needs, and vice versa. During the early pre-adolescent period in the learning career, the emphasis is on child nature; during the adolescent period in the learning career, the emphasis is on social needs.

The objectives of the elementary school should turn on an analysis of children's interests and activities. The work of the kindergarten and elementary grades should be dominated by child nature and behavior. This does not contradict the principle that usefulness shall govern education. A selection of objectives based upon children's activities would not exclude certain practical pursuits in which the child engages in the home. Nor should it entirely exclude objectives which relate to adult experience. Repeated analyses of objectives have convinced us that much which affects adults touches the life of the child intimately and offers material for study and observation which is both useful and interesting to the child. Furthermore, it is not necessary to exclude certain important objectives ascertained by an analysis of social needs. A selection from such objectives, should, however, be made by thoughtful, experienced teachers who can judge their suitability for children or the possibility of adapting them to the interests and capacities of children.

It should therefore not be very surprising that those who are conducting project or activity curricula are most energetic in carrying on useful life, if not adult activities. For example, Wells' *Project Curriculum* incorporates much of the content of economic life from the major fields of food, clothing, shelter, utensils, records, and tools. The major projects for the three grades are *playing families*, *playing store*, and *playing city*. Miss K. L. Keelor's *Curriculum Studies in the Second Grade* revolved about the construction of a house out of a large packing box. This led to the building of other structures, and eventually to the development

of a whole city. The incidental problems involved such necessities as a place in which men work, a grocery store, a furniture store, a department store, a railroad station, a pier, a cold storage plant, and so on. The children studied certain practical situations in their real environment, such as how a house receives water, heat, light; how it disposes of waste; how bread is made; and so on. An illustration of useful activity in Colling's *An Experiment with a Project Curriculum* is a cocoa enterprise which the children undertook. A local merchant gave a pupil a sample package of cocoa and asked him to try it in school. The pupils agreed to make cocoa after determining that it was good food and didn't cost too much. They studied how to make cocoa, brought equipment and materials, and eventually prepared a luncheon at which they served thirty-two cups of cocoa. Similar illustrations are common in the several activity curricula worked out by Prof. Hill and her associates at the Horace Mann School in New York City; by Miss Reynolds and her associates in the public schools of Seattle; by Miss Salisbury and her associates in the training of the University of California; and by Miss Pratt and her associates at the City and Country School in New York City.

We shall discuss project curricula in detail in a later section because they belong to the general group whose objectives are not determined quantitively, if at all. At present, we wish to consider objectives determined by a quantitative analysis of children's interests.

Quantitative Analysis of Children's Activities

The study of child nature in the past has been carried on chiefly by psychologists to discover certain general tendencies in human behavior. The problem here is to discover the particulars of the child's individual and social

conduct for the purpose of discovering the details of the curriculum of the elementary school. The method of the new curricular studies is no less rigorous than the earlier psychological studies. The new method uses all the raw data and translates them into school activities instead of psychological principles.

According to this method, pupils are observed and their habits or activities are recorded; thus their characteristics are determined. In this way, Dr. Rogers made an inventory of children's habits which was later used as a basis of a conduct curriculum. Sometimes pupils are asked to hand in statements of their activities outside of school. Some of the outside reading of children was determined in this way. Some investigations required children to indicate their choices from a list of poems, literary selections, songs, or pictures. Other investigations required children to hand in questions in a particular field which they would like to have answered. Thus it was discovered in what children were interested or about what they were curious. In all of the analyses of children's interests which are listed below a count was made to determine the children's activities or interests. Those which were most common as indicated by the quantitative investigation were used as the basis of the course of study.

The natural behavior of children is frequently difficult to isolate for study. The presence of adult observers modifies the behavior of children. The class room, for example, is an unusually artificial social situation. In particular, studies which depend upon children's reactions in the schoolroom should be planned so as to be free from suggestion by the teacher.

When children are asked to record their activities outside of school it is important that they should be made to feel the absence of criticism. For example, children who report

their outside reading should feel that it bears no relation to their grades. A study which assembles such information casually and informally is freer from error than one which has the characteristics of a school exercise.

In making a curriculum for a city it should be remembered that children's activities in different neighborhoods differ. The activities of a tenement district, industrial district, water-front district, and suburban district depend partially upon the immediate environment. Only the common interests may go into a core curriculum.

Assignment

The class meeting will consist of reports by members of the class on investigations of children's activities. Select one of the following references and be prepared to report on (1) the purpose of the investigation, (2) the method of the investigation, (3) the results of the investigation, and (4) criticism of the method of investigation. Read as many references as you can in addition to the one on which you are to report.

Questions for Discussion

What are the limitations of objectives determined by an analysis of children's activities, interests, or questions? What are the advantages?

How may some of the limitations be overcome?

When is this method of determining objectives most appropriate? Why?

Is there any necessary antagonism between child nature and social needs? Why?

Can you give illustrations of the natural interests of children which are useful to them now, and will continue to be when they are adults?

Readings

FINE ARTS

McCarty, S. A. — *Children's Drawings*, Williams and Wilkins, 1924. (Also in Department of Superintendence — *Third Yearbook*, pp. 342–344.)

Zesbaugh, H. A. — "An Analysis of the Graphic Representation of the Human Figure by School Children"; *Elementary School Journal*, June 1926, pp. 759–770.

HEALTH AND RECREATION

Lehman, H. C. — "Play Activities of Persons of Different Ages"; in Bobbit, F. — *Curriculum Investigations*. An analysis of the play activities of 16,568 persons of both sexes and different ages.

—— and Witty, P. A. — "The Play Interests of Children of Ages Five to Eight"; *Childhood Education*, March, 1927, pp. 299–303.

LANGUAGE

Abbott, Allan — "Reading Tastes of High School Pupils"; *School Review*, October, 1902, pp. 585–600.

Anderson, R. E. — "A Preliminary Study of the Reading Tastes of High School Pupils"; *Pedagogical Seminary*, December, 1912, pp. 438–460.

Bell, J. C. and Sweet, I. B. — "Reading Interests of High School Pupils"; *Journal of Educational Psychology*, January, 1916, pp. 39–45.

Dunn, F. — *Reading Interest Factors in Primary Reading*, Teachers College, 1921. (Also in Uhl — *The Materials of Reading*, pp. 99–103.)

Eaton, H. T. — "What High School Students Like to Read"; *Elementary Education*, December, 1922, pp. 204–209.

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HUGHES, F. M. — "A Survey of the Reading Interests of the Pupils of the Madison, Wisconsin, High School"; *Education*, March, 1924, pp. 437–438.

JORDAN, A. M. — "Children's Interests in Reading"; *Pedagogical Seminary*, September, 1925, pp. 455–469. (Also in the series, *Contributions to Education*, Teachers College.)

MACKINTOSH, H. K. — "A Study of Children's Choices in Poetry"; *Elementary English Review*, May, 1924, pp. 85–89.

SMITH, D. V. — "The Danger of Dogma in Composition Content"; *English Journal*, June, 1926, pp. 414–425. A study of the preferences of composition topics of 10,000 junior high school pupils.

SMITH, F. O. — "Pupils' Voluntary Reading"; *Pedagogical Seminary*, June, 1907, pp. 208–222.

TERMAN, L. M. AND LIMA, M. — *Children's Reading*, Appleton, 1926. (Also in *Journal of the National Education Association*, June, 1926, pp. 169–170.)

WASHBURNE, C. W. AND VOGEL, M. — *The Winnetka Graded Book List*, American Library Association, 1926. A study of the reading habits and tastes of 36,750 children in 34 widely scattered cities.

WHEELER, T. — "A Study of Certain Recreational Reading and Vocational Phases in the Lives of Young Girls"; *Journal of Educational Psychology*, December, 1920, pp. 481–501.

WIGHTMAN, H. J. — "A Study of Reading Appreciation"; *American School Board Journal*, June, 1915, p. 42.

WISSLER, C. — "The Interests of Children in the Reading Work of the Elementary Schools"; *Pedagogical Seminary*, April, 1898, pp. 523–540.

PRACTICAL ARTS

KENT, E. B. — *The Constructive Interests of Children*, Teachers College, 1903.

SCIENCE

CURTIS, F. D. — *Some Values Derived from Extensive Reading of General Science*, pp. 27–40, Teachers College, 1924. An analysis of over 3,000 questions received from children.

DOWNING, E. R. — "Children's Interests in Nature Materials"; *The Nature Study Review*, December, 1912. (Also in Department of Superintendence — *Third Yearbook*, p. 299.)

MAU, L. E. — "Some Experiments Regarding the Relative Interests of Children in Physical and Biological Materials in the Kindergarten and Primary Grades"; *The Nature Study Review*, November, 1912. (Also in Department of Superintendence — *Third Yearbook*, pp. 298–299.)

PALMER, L. E. — "How to Meet Some of Children's Nature Interests"; *The Nature Study Review*, January-February, 1922, pp. 23–30. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 198–204.) An analysis of 500 children's questions.

POLLOCK, C. A. — *Children's Interests as a Basis of What to Teach in General Science*, Ohio State University, Educational Research Bulletin, Vol. III, January 9, 1924 (Bureau of Educational Research).

TRAFTON, G. H. — "Children's Interests in Nature Materials"; *The Nature Study Review*, September, 1913. (Also in Department of Superintendence — *Third Yearbook*, pp. 299–300.)

WASHBURNE, C. W. — *Scientific Method in Construction of School Textbooks.* A prospectus published by the World Book Co.

SOCIAL STUDIES

MELTZER, H. — *Children's Social Concepts*, Teachers College, 1925.

NINTH MEETING

PRACTICE IN ANALYSIS OF CHILDREN'S ACTIVITIES

We have discussed the method of analyzing the natural activities of children and have studied several actual investigations applying this method. For the purpose of having some experience with the method in a small way, the student will carry out any one of the following exercises:

1. Put the following task to your class and tabulate the data: "During the next two days write all the questions which our class in (name the subject) ought to answer; hand in your answers." You may modify the form of this statement to suit yourself, stating your conclusions in terms of objectives.

2. Select thirty poems appropriate to children in your grade. Have the children read these and rank them in order of preference. Tabulate the results of the thirty poems and state your conclusions in terms of objectives.

3. Give the following assignment to your pupils: "Tomorrow bring in a list of things that you have made at home in the last month." Tabulate the results and state conclusions in terms of objectives.

4. Give the following assignment to your class: "Hand in a list of the games that you play at home and with your companions on the street; if it is an unusual game, give a very brief description of it." Tabulate the results and state your conclusions in terms of objectives.

5. Select about thirty phonograph records and play them for your pupils. Ask them to rank them in the order in which they enjoyed them. Tabulate the results and state your conclusions in terms of objectives.

6. Make a collection of color prints of great paintings. Observe the necessary precautions, show them to your pupils, and ask them to rank the pictures in the order in which they enjoyed them.

7. Make a list of about twenty-five possible excursions to parks, public buildings, industrial plants and so on. Ask your pupils to indicate the order of their preference. Tabulate the results and state them.

8. Make a comprehensive list of articles which children would be likely to want to make in a woodwork shop. Mimeograph the list and give each pupil a copy. Ask the

pupils to rank the articles in the order in which they would enjoy making them.

9. Make a comprehensive list of science topics that children would be likely to want to know something about. Mimeograph the list and give it to the pupils. Have them indicate by appropriate letters their interests in these topics.

10. Carry out on a very small scale any of the investigations that pertain to the present method. Be prepared to submit your data and to report your results to class.

11. Make any small-scale, original investigation of children's activities, interests, or questions, and state the educational objectives which grow out of the investigation.

Questions for Discussion

What are the deficiencies of this method? The advantages?

Do children's activities, interests, and questions reveal all the needs which should be met by education?

TENTH MEETING

DERIVING OBJECTIVES FROM PROJECT CURRICULA

There are now in print over a score of conduct or activity curricula. These are all based upon the native and spontaneous interests and activities of children. They are applied chiefly in the early grades where the influence of the kindergarten was most strongly felt. They were particularly emphasized in schools which unified the kindergarten and primary grades. We may expect the influence of activity curricula to grow as the present movement to unify the kindergarten and the first three grades spreads.

These activity curricula very likely began with some flexible, if not nebulous, plan in the teacher's mind and developed in the direction of the children's enlarging and widening interests. The activities were recorded for the purpose of evaluating these self-developed curricula; of furnishing material for other teachers or experimenters; and of stimulating discussion and spreading the idea. They were full and informal journals of the activities of the children. These records of the experiences of the children form the curricula which we are here considering. The end-products of such curricula are not really objectives in the sense that we have been using the term, namely, the predetermined useful goals. In fact, whenever the idea of an objective is used in these curricula it is called an outcome, which is as it should be.

Although the project curricula, thus far, have developed as informal statements of past experience, there is some evidence that they are beginning to be formalized. For example, we find that a post office enterprise appears first in the account of Dr. Wells' *Project Curriculum* in 1921; in Miss Burke's *Conduct Curriculum* in 1923; in Miss Salisbury's *Activity Curriculum* in 1924; in Miss Pratt's *Experimental Practice in the City and Country School* in 1924; in Miss Heiny's *Social Science Interests for the First Grade* in 1925; and in Miss Moffat's *A Second Grade Curriculum Based on Social Studies* in 1926.

It may be said, in general, that the curricula here considered take a project, an enterprise, or a complete activity as a unit of subject matter. When the curricula adhere rigidly to the theory underlying the "project method," the enterprise or activity is originated by the children; the children engage in it whole-heartedly, and the activity is directed toward the achievement of the child's goal. From the curriculum maker's point of view we are at present inter-

ested in the objectives as they develop from the activity curricula, and we have seen that, in reality, they are not objectives but outcomes. There is no reason, however, why we cannot take these outcomes and submit them to a reasonable process of selection and rejection and add the desirable outcomes to those ascertained by quantitative analyses of children's interests, activities, and questions. When, later, we come to consider the planning of *activities* to achieve objectives, we shall find the project curricula rich in suggestions.

Assignment

It should be remembered that we are here concerned with methods of discovering objectives and not with an evaluation of the project method. However, the adoption of a project curriculum has such a deep-seated influence upon the nature and organization of the curriculum that the student is strongly advised to read one of the following references which discuss this matter:

Bonser, F. G. — *The Elementary School Curriculum*, Ch. 6, Macmillan, 1920.

Charters, W. W. — *Curriculum Construction*, Ch. 14, Macmillan, 1923.

Department of Superintendence — *Second Yearbook*, 1924, pp. 208–213.

McMurry, C. A. — *How to Organize a Curriculum*, Ch. 2, Macmillan, 1924. Read selectively.

Having become familiar with the general effect of the adoption of the project method upon the nature and organization of the curriculum, the student is required to examine rather carefully one of the following project curricula and be prepared to give (1) his reaction to the curriculum, (2) answers to the questions. The report is to be in writing.

Questions for Discussion

How did activity curricula develop?

Do activity curricula recognize objectives?

What idea in these curricula corresponds to an objective?

Can you produce any evidence to show that activity curricula are beginning to become formal?

What is the unit of instruction?

How may the outcomes of project curricula be used in curriculum making?

What parts of project curricula are particularly helpful in curriculum making?

Readings

Andrus, R. — *A Tentative Inventory of the Habits of Children from Two to Four Years of Age*, Teachers College, 1924.

Burke, A. and Others — *A Conduct Curriculum*, Scribner, 1923.

Collings, E. — *An Experiment with a Project Curriculum*, Macmillan, 1923.

Denver, Colorado, Public Schools — *Course of Study: Kindergarten*, Monograph Number One, 1924.

Fox, F. F. — *Major Projects in Elementary Schools;* United States Bureau of Education, Bulletin, 1921, No. 36.

Francis W. Parker School — *Yearbooks:*

—— Volume I, *The Social Motive in School Work*, 1912.

—— Volume II, *The Morning Exercise as a Socializing Influence*, 1913.

—— Volume III, *Expression as a Means of Training Motive*, 1914.

—— Volume IV, *Education through Concrete Experiences*, 1915.

—— Volume V, *The Course in Science*, 1918.

—— Volume VI, *The Individual and the Curriculum*, 1920.

—— Volume VII, *Social Science Series—The Course in History*, 1923.

Hamaide, A. — *The Decroly Class*, Dutton, 1924.

Heiny, E. B. — *Social Science Interests for the First Grade*, Kenyon, 1925. An activity curriculum for the first grade in social

science including food, shelter, transportation, and recreation.

IRWIN, E. — "Personal Education"; *New Republic*, November 12, 1924, Education Section. A forceful presentation of the view that the curriculum should be revised to conform to the nature of the child.

KEELOR, K. L. — *Curriculum Studies in the Second Grade*, Teachers College, 1925.

LOS ANGELES CITY SCHOOL DISTRICT — *Course of Study: Kindergarten, First and Second Grades*, September 1, 1924.

—— *Course of Study: Third and Fourth Grades*, September 1, 1924.

—— *Course of Study: Fifth and Sixth Grades*, September 1, 1924.

MERIAM, J. L. — *Child Life and the Curriculum*, World Book Company, 1920.

MOFFATT, M. — "A Second Grade Curriculum Based on Social Studies"; *Journal of Educational Method*, March, 1926, pp. 307–313.

PICKETT, L. H. AND BOREN, D. — *Early Childhood Education.* Contains a first grade curriculum and projects worked out by kindergarten children.

PRATT, C. AND OTHERS — *Experimental Practice in the City and Country School*, Dutton, 1924.

PRATT, C. AND STANTON, J. — *Before Books*, Dutton, 1926. Record of the activities of two grades.

REED, M. M. — "Social Studies in the Kindergarten and First Grade"; *Teachers College Record*, September, 1926. A curriculum based on activities of children and designed to meet their social needs.

REYNOLDS, H. M. — *A Course of Study in Terms of Children's Activities for Kindergarten and Primary Grades*, Seattle Public Schools, 1923.

SALISBURY, E. I. — *An Activity Curriculum*, Harr Wagner, 1924.

VANDEWALKER, N. C. AND OTHERS — *A Kindergarten — First Grade Curriculum;* United States Bureau of Education, Bulletin 1922, No. 15.

WELLS, M. E. — *A Project Curriculum*, Lippincott, 1921.

ELEVENTH MEETING

PRACTICE IN DERIVING OBJECTIVES FROM PROJECT CURRICULA

From one of the project curricula listed under the preceding meeting, select about thirty outcomes. If necessary, translate these outcomes into objectives of the same form of expression. Suggest a basis of selecting and rejecting the outcomes. Proceed to select and reject according to your plan. Your final list of objectives will consist of those which you would accept for inclusion in a course of study.

TWELFTH MEETING

DETERMINING OBJECTIVES BY ANALYSIS OF THE SOCIAL NEEDS OF THE LEARNER

This section will be devoted to the general studies which have been made to determine actual life needs. A special application of this method is proposed by Dr. Snedden and will be considered separately. The application of this method to the analysis of duties of industrial and commercial occupations involves a special procedure which will also be considered separately.

According to this method we make an analysis of actual life conditions. It may begin with a phase of life or with a common school subject. It is usually a direct survey of the actual needs of the learner. Such surveys are possible only for a narrow phase of life, such as language or physical defects. With the normal resources of a curriculum-making agency the analysis can be made only for a relatively small group. Such studies require a great deal of time and labor and the coöperation of many persons.

The emphasis in these studies is on the discovery of the pupils' needs. Those who make this approach subscribe to the viewpoint that the school should primarily prepare for the needs of life. Some investigators study adult needs, some study child needs, and frequently there is no evidence of a division. The principal characteristic of the studies is its consideration of certain needs which lie outside the field of the child's natural behavior.

The term *needs* is used here rather broadly. As a rule, the investigators do not make the rigorous investigation which is involved in a discovery of needs. Such an investigation requires a systematic procedure to select the desirable modes of conduct and to reject the undesirable ones. Commonly, then, we find that the investigator is satisfied that what is now done will need to be done. Sometimes he has certain casual and perhaps personal criteria of selection. For example, a study of the arithmetical operations made by adults at home showed only what they now do, but failed to show what they ought to do.

In fact we have in most cases an analysis of the activities in which persons now engage. The use of the word activity was purposely avoided in order not to confuse the present method which is concerned with activities which we need to engage in effectively in order to live well, and the first method which is concerned with the natural activities of child life prompted from within.

In a few cases the aim is to determine what persons ought to do as opposed to what they are merely now doing. As already suggested this procedure involves a comparison between present habits of living and standards of improvement over present habits. Sometimes the standards are definitely set up as, for example, the legible handwriting of adults. Sometimes the standards are taken for granted as when we indicate grammatical errors by violation of the

rules of language. Sometimes the standards are those derived by experts or dictated by science as when we refer to the dental expert for the best method of brushing the teeth.

The studies listed in the reading list illustrate certain simple investigations, such as to determine by an analysis of letters written by adults exactly what words the pupil will need to learn to spell; to determine, by an analysis of the calculations performed by over 4,000 families in a particular town, the most common arithmetical problems the pupil should be able to solve; to determine, by an analysis of the most common language errors made by children in a given city, exactly what grammatical elements the pupil should master; to determine by an analysis of the repair work done in the homes of a given community in what mechanical operations the pupil should be skilled; and so on.

The grades beyond the elementary level, that is, beyond the sixth grade, should be dominated by social needs. The pupil in the junior high school years and beyond becomes more closely identified with organized social life. Adult social needs become more apparent to him. The mastery of abilities for immediate and later use become more significant. It is not intended, however, that social needs exclusively shall determine the objectives on the secondary level. The most fundamental needs, as agreed upon by any group, must be met in the education of adolescents. Those units of activity, the importance of which is doubtful, need not be included if they are too foreign to the interests of the pupils, or too difficult to master. Here the opinion of intelligent and experienced teachers is the best guide to selection and rejection.

Assignment

The class meeting will consist of reports by members of the class on investigations of the needs of the learner. Se-

lect one of the following references and be prepared to report on (1) the purpose of the investigation, (2) the method of the investigation, (3) the results of the investigation, and (4) a criticism of the method. Read as many references as you can in addition to the one on which you are to report. In some cases the secondary sources are given. The student who wishes to read the investigation in full should go to the original source.

Readings

HANDWRITING

Koos, L. V. — "The Determination of Ultimate Standards of Quality in Handwriting for Public Schools"; *Elementary School Journal*, February, 1918, pp. 423–446. (Also in Department of Superintendence — *Third Yearbook*, pp. 209–211.)

HEALTH AND RECREATION

Davis, W. W. — "The Questionnaire Method in Health Education"; *Elementary School Journal*, January, 1923, pp. 373–386. (Also in Department of Superintendence — *Third Yearbook*, pp. 305–308.)

Forman, W. O. — "The Use Made of Leisure Time by Junior High School Pupils"; *Elementary School Journal*, June, 1926, pp. 771–774.

Todd, E. M. — "Provision in the High School Curriculum for Correcting Physical Defects"; *Journal of Educational Research*, January, 1921, pp. 224–247. (Also in Charters, W. W. — *Curriculum Construction*, pp. 324–326.)

Wood, T. D. and Strang, R. — "The Making of a Course of Study in Health for a Specific Situation"; *Teachers College Record*, November, 1925, pp. 224–247.

LANGUAGE

Atkins, R. E. — "An Analysis of the Phonetic Elements in a Basal Reading Vocabulary"; *Elementary School Journal*, April, 1926, pp. 596–606.

AYRES, L. P. — *The Spelling Vocabularies of Personal and Business Letters*, Russell Sage Foundation, 1913. (Also in Charters, W. W. — *Curriculum Construction*, pp. 171–173, and in Department of Superintendence — *Third Yearbook*, pp. 112–114.)

BLANTON, S. — "A Survey of Speech Defects"; *Journal of Educational Psychology*, December, 1916, pp. 581–592.

BOBBITT, S. A. — "Shortcomings in the Written English of Adults"; in Bobbitt, F. — *Curriculum Investigations*, 1926. An analysis of the errors in 362 letters written to a newspaper.

CAPPS, A. G. — "Curriculum Content of a High School Spelling Course"; *Journal of Educational Research*, October, 1920, pp. 626–655. (Also in Department of Superintendence — *Third Yearbook*, pp. 141–142.)

CHARTERS, W. W. AND MILLER, E. — "A Course of Study in Grammar Based on Language Errors"; in Charters, W. W. — *Curriculum Construction*, pp. 201–208.

GATES, A. I. — "The Construction of a Reading Vocabulary for the Primary Grades"; *Teachers College Record*, March, 1926, pp. 625–642.

IRION, T. W. H. — *Comprehension Difficulties of Ninth Grade Students in the Study of Literature*, Teachers College, 1925.

JOHNSON, R. I. — *English Expression*, Public School Publishing Co., 1926. Analysis of the language activities reported by 104 freshmen and their mothers. Also an analysis of 1000 letters of students to discover their deficiencies as compared with certain good letters.

JONES, F. W. — *Concrete Investigation of the Material of English Spelling*, University of South Dakota, 1915. (Also in Charters, W. W. — *Curriculum Construction*, pp. 177–179, and in Department of Superintendence — *Third Yearbook*, p. 135.)

MCKEE, G. M. — "Children's Themes as a Source of Spelling Vocabulary"; *Elementary School Journal*, November, 1924, pp. 197–206.

PRESSEY, S. L. — "A Statistical Study of Usage and of Children's Errors in Capitalization"; *English Journal*, December, 1924, pp. 727–732.

RUHLEN, H. AND PRESSEY, S. L. — "A Statistical Study of Current Usage in Punctuation"; *English Journal*, May, 1924, pp. 325–331.

STORMZAND, M. J. AND O'SHEA, M. V. — *How Much English Grammar?* Warwick and York, 1924. A study of constructions in composition.

THORNDIKE, E. L. AND OTHERS — "An Inventory of English Constructions with Measures of Their Importance"; *Teachers College Record*, February, 1927, pp. 580–610.

VOGEL, M., JAYCOX, E., AND WASHBURNE, C. W. — "A Basic List of Phonics for Grades I and II"; *Elementary School Journal*, February, 1923, pp. 436–443.

MATHEMATICS

CHARTERS, W. W. — *Curriculum Construction*, pp. 231–236, Macmillan, 1923. Analysis of arithmetic involved in 7,337 charge checks and 4,304 cash checks collected in a department store.

CHASE, S. E. — "Waste in Arithmetic"; *Teachers College Record*, September, 1917, pp. 350–371. Quantitative elements in the out-of-school activities of junior high school pupils.

GALLAWAY, T. T. — "Mathematics Needed in a Freshman Course in Clothing"; in Charters, W. W. — *Curriculum Construction*, pp. 241–243. Analysis of the text used in the course to discover the mathematics involved.

GIST, A. S. — "Errors in the Fundamentals of Arithmetic"; *School and Society*, August 11, 1917, pp. 175–177.

MINNICK, J. H. — "Arithmetical Errors Made by High School Pupils"; *Mathematics Teacher*, December, 1918, pp. 80–89.

NOON, P. G. — "The Child's Use of Numbers"; *Journal of Educational Psychology*, November, 1919, pp. 462–467. (Also in Department of Superintendence — *Third Yearbook*, p. 50.)

PARTRIDGE, C. M. — "Number Needs in Children's Reading Activities"; *Elementary School Journal*, January, 1926, pp. 357–366.

SMITH, N. B. — "An Investigation of the Uses of Arithmetic in Out-of-School Life of First Grade Children"; *Elementary School Journal*, April, 1924. (Also in Department of Superintendence — *Third Yearbook*, pp. 60–61.)

SCHORLING, R. — *A Tentative List of Objectives in the Teaching of Junior High School Mathematics*, pp. 46–54, Wahr, 1925. Studies of occurrence of (1) mathematical terms, (2) units of measure, (3) "uncommon" fractions in general reading.

THORNDIKE, E. L. — *Psychology of Algebra*, p. 70, Macmillan, 1924. Analysis to discover the mathematics included in forty-four texts in social science, physics, biology, and practical arts.

WILSON, G. M. — *The Social and Business Uses of Arithmetic*, Teachers College, 1919. (Also in Charters, W. W. — *Curriculum Construction*, pp. 223–231, and in Department of Superintendence — *Third Yearbook*, pp. 223–231.)

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MUSIC

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FRESNO PUBLIC SCHOOLS — "Vocational Survey"; Department of Superintendence — *Fifth Yearbook*, pp. 372–373. A study of the home activities of 300 junior high school girls.

FULLER, L. D. — "Manual Arts Based on Home Repair"; *Journal of Educational Research*, March, 1921. (Also in Charters, W. W. — *Curriculum Construction*, pp. 300–307.)

HASTIE, M. A. — "The Home Survey for Curriculum Revision in Home Economics"; Department of Superintendence — *Fifth Yearbook*, pp. 369–370. A study of the household activities of 550 farm, town, and city families.

—— AND GORTON, G. — "What Shall We Teach Regarding Clothing and Laundry Problems"; *Journal of Home Economics*, March, 1926, pp. 127–133.

HOPKINS, L. T. AND KINYON, K. W. — *Home Economics;* Research Monograph Number One. Public Schools, Denver, Colorado, 1925.

KINYON, K. W. — "Curriculum Making in Home Economics in the Denver Schools"; *Journal of Home Economics*, March, 1925.

MILLER, W. S. AND SIEVERS, T. G. — "A Unit Course of Study in Electricity"; Department of Superintendence — *Fifth Yearbook*, pp. 413–420. An analysis of repair and construction activities carried on in the homes of Denver junior and senior high school boys.

STEIDTMAN, C. E. AND SCOTT, A. J. — "What Shall We Teach in Household Mechanics?" *Industrial Education Magazine*, January, 1925, pp. 192–195.

STRUCK, F. T. — *Farm Shop Work in Pennsylvania*, Pennsylvania State College, School of Agriculture, Rural Life Department, Special Bulletin No. 1. (Also in Charters, W. W. — *Curriculum Construction*, pp. 297–300.)

SCIENCE

HERRIOTT, M. E. — "Life Activities and the Physics Curriculum"; *School Science and Mathematics*, June, 1924, pp. 631–634. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 299–301.) Six representative groups of people indicated which of 576 activities entered into their lives.

SOCIAL STUDIES

ALDERMAN, G. H. — "What the Iowa Layman Should Know about Courts and Law"; *The School Review*, May, 1922, pp. 360–364. (Also in Department of Superintendence — *Third Yearbook*, pp. 265–266.)

Goss, R. R. — "What Civic Knowledge Is Needed by an Indiana Layman?" Department of Superintendence — *Third Yearbook*, pp. 266–268.

THIRTEENTH AND FOURTEENTH MEETINGS

PRACTICE IN THE ANALYSIS OF SOCIAL NEEDS

We are at present concerned with determining objectives by a direct analysis of the needs of the learner, with special attention to certain investigations which apply to the field of general education. Having become familiar with a number of studies which exemplify this method, the student is ready himself to make a small scale analysis of this character. The results of the fragmentary study will be of no consequence, but the student will experience the technique used by previous competent investigators. The procedure is really very simple in every case. The extensive studies involve no more difficult technique, but they do involve certain pains in the accurate selection, manipulation, and interpretation of the data. Some of the exercises suggested may appear to be mechanical and trivial, but the student must carry them out if he is to have an appreciation of the actual work of investigators.

Assignment

Carry out any two of the following investigations. Be prepared to report in class on (1) the purpose, (2) the method, (3) the results, and (4) a criticism of your study.

1. Select a full-page, department store advertisement. List all the nouns which occur and after each the number of times it occurs. Arrange in alphabetical order and hand in. If a *Thorndike Word Book* is available, list after each noun

its frequency as given in this book. The purpose of this fragmentary investigation is to discover whether we are now teaching children such words as are necessary to understand newspaper, department store advertising.

2. Put the following questions to your class and tabulate the answers: "(1) What did you do in the last week outside of this class that relates to (name of subject)? (2) What did you see in the last week outside of school that relates to (name of subject)? (3) What did you read in the last week outside of this class that relates to (name of subject)?" You may modify the form of this statement to suit yourself. State the educational objectives which grow out of the investigation.

3. Give the following assignment to your pupils. "Hand in a list of all the things that you did last week to help keep your home clean." Tabulate the results and state your conclusions in terms of objectives.

4. Give a physical examination to a limited number of pupils, say ten. Tabulate the results and arrive at a few objectives of physical education for these pupils. If you cannot give the physical examination, perhaps you can secure the records of physical examinations of a number of pupils.

5. By means of a simple questionnaire determine what books the members of your staff have read for recreation at certain periods or ages. What objectives do you derive from this analysis?

6. List the errors in pronunciation made by your pupils during one week. Tabulate them, study your results, and make a list of objectives which grow out of your analysis.

7. Assuming that you wish to have your pupils improve the recreational habits which they now have, give them the following questions: "What outdoor games do you now play? What dances do you do at home and at parties? What exercise do you take? What athletic sports would

you like to learn?" Tabulate the results and set up a number of objectives.

8. You wish to discover what science enters into the daily life of your pupils. Ask the class to list what they did out of school every day for a week. Select those activities which bear upon science, tabulate them, and arrive at a few objectives of science.

9. List the adjectives in a popular children's book and indicate the number of times each occurs. Arrange the list in order of frequency. Compare your list with the *Thorndike Word Book* to discover if the latter gives adequate attention to children's literature.

10. You wish to make a course in manual arts more practical. Ask your pupils to keep a record of the actual tasks of repair or construction done in the home for a period of a week. Collect the data, tabulate it, and state your conclusions in terms of objectives.

11. You wish to plan a course which will help the pupil to avoid the most common grammatical errors. Without informing your pupils, keep a record of the grammatical errors made by them for a week. Tabulate them. Select the most common errors. For each error indicate the rule and the definitions necessary in order to avoid the error. State your conclusions in the form of objectives.

12. You wish to determine what arithmetical operations are necessary to make accurate purchasing transactions. Go to your grocer and make an inventory of his goods. For each commodity indicate the most common units of measure bought by the consumer. Tabulate the units of measure and indicate your conclusions as objectives.

13. Ask your pupils to give the names of the songs they sang during the preceding day, and on what occasion they sang them. Keep this up for a week. Tabulate the data and state your conclusions as objectives.

14. Carry out on a very small scale any of the investigations you have read or heard reported.

15. Make any small scale original investigation of the present or future needs of the learner.

FIFTEENTH MEETING

DETERMINING OBJECTIVES BY ANALYSIS OF "CASE GROUPS"

This general method of determining objectives by analysis of "case groups" is proposed by Dr. David Snedden, Professor of Educational Sociology at Teachers College, Columbia University. It emphasizes the importance of adapting instruction to the particular needs of a distinguishable group in a given locality. Illustrating the method in the field of social education, Dr. Snedden proposes (1) that we rank a hundred men, thirty to forty years of age; (2) that we select Grade B men, *i.e.*, the twenty-first to the fiftieth; (3) that we ascertain the cultural and civic qualities which B men possess; (4) that we ascertain the cultural and civic deficiencies which the B men possess; (5) that the inferences from this analysis make up the program of education for the next generation. The process of education, then, consists of elevating various distinguishable groups of citizens to the level of the desirable characteristics of the B group.

The method has not as yet developed a complete and refined technique. Applications of this method have been made chiefly by students working directly under Dr. Snedden, resulting in the publication of a number of fragmentary studies and one extensive investigation. The latter was conducted by Mr. Clyde Moore to discover a program of civic education for mid-western farmers. He made a social analysis of this "case group" whose members were similar in many re-

spects. This analysis included the geographic environment, intelligence, economic condition, home life, infant care, and so on. The civic shortages were listed and the objectives of civic education were the positive elements of the program of which the civic shortages were the negative elements. The evaluation of the social habits of the group was entirely subjective.

This method assumes that the investigator will make a direct survey of the needs of a particular homogeneous group. It requires that one shall determine the abilities, characteristics, or traits of the good members of a particular group; that he shall discover the deficiencies of this group by a comparison with the desirable qualities of the good members; and finally that he shall set up a program of training to correct the deficiencies. Such a method cannot escape a good deal of subjective thinking. However, it is possible to conceive of the investigator using sound objective data or reliable secondary data in analyzing a "case group." The validity, then, of the "case group" method depends entirely upon the specific techniques used in the study of the distinguishable group of persons. To carry out this method in certain of our large cities would require at least a dozen intensive curriculum studies because there is such a large variety of distinguishable groups.

Assignment

Read any of the following references which either describe or apply the present method of determining objectives. If you read a general description of the method, submit, first, a written report of the method and, second, a criticism of the method. If you read an application of the method, submit a written report (1) of the purpose of the investigation, (2) the method of the investigation, (3) the results of the investigation, and (4) a criticism of the investigation. The oral report in class should be made without the use of notes as far as possible.

Questions for Discussion

To what degree may we determine objectives which apply to all the people alike?

To what degree is it necessary to determine the educational objectives of special groups?

Does Dr. Snedden imply that it is necessary to organize a school into social groups depending upon their backgrounds and needs?

Is there any relation between the analysis of case groups and the curriculum problems which arise from the present tendency to divide pupils into mental groups?

Readings

Moore, Clyde — *Civic Education, its Objectives and Methods for a Specific Case Group*, Teachers College, 1924.

Snedden, David — *Civic Education*, World Book Company, 1922. The latter part of the book contains a number of studies of "case groups." Select any one for reading.

—— *Home Economics Education*, Teachers College, 1924. The book consists of a number of suggested courses in the field of home economics based upon analyses of case groups. Select one for reading.

—— "Planning Curriculum Research"; *School and Society*, September 12, 1925, pp. 319–322.

—— *Sociological Determination of Objectives in Education*, pp. 218–221, 239, 259–263, Lippincott, 1921.

SIXTEENTH MEETING

PRACTICE IN THE ANALYSIS OF A "CASE GROUP"

Select a specific group of persons who have certain common characteristics. Make a brief statement describing the social, economic, and cultural status of the group. List

the desirable qualities of the good members of this group in detail for any one major field of life, such as health, homemaking, care of clothing, and so on. List the deficiencies of this group in detail. Compare the deficiencies with the desirable qualities of the group and propose recommendations for the group's improvement in the particular field which you have selected. State your recommendations in the form of objectives.

SEVENTEENTH MEETING

DETERMINING OBJECTIVES BY JOB ANALYSIS

The contribution of vocational education to the technique of curriculum making is job analysis. It was first employed in industry to help in the selection of employees to perform certain specific duties. During the World War, workers in vocational and general education had unusual opportunities to observe and refine the technique. It was at this time that they saw the possibilities of using job analysis for planning courses of training. At the present time, the Federal Board for Vocational Education, industrial and commercial associations, trade unions, universities, state departments of education, and municipal departments of education are using the technique of job analysis in making vocational curricula.

The term job analysis, borrowed from vocational education, was applied unthinkingly to all sorts of curricular problems in general education. It appropriately belongs to vocational education where the analysis of a job like bookkeeping is made to determine the exact steps in the process of training for that job.

The general method of procedure consists of the following

steps: (1) the investigator observes the work to see its broad outlines; (2) he lists the operations as they come; (3) this list is revised by interviews with workmen, foremen, executives; (4) sometimes the analyst actually does the work himself to discover the duties; (5) he lists the information required to carry on those jobs; (6) he lists related information not necessary to the job, but desirable; (7) instructional material is prepared in connection with each operation. Several analysts have developed a rather specific technique independently. The three outstanding special procedures are those of R. W. Selvidge, W. W. Charters, and C. R. Allen.

The method, according to R. W. Selvidge, is to analyze a trade into basic operations, not jobs. An operation is a fundamental mechanical process of the trade which occurs in practically identical form in many jobs. For example, the trade of plumbing is divided into forty operations, bookkeeping into forty-six operations. Each operation is analyzed to indicate what the learner must do to acquire the necessary skill. For instructional purposes the directions are printed as operation sheets. For each trade, there are as many operation sheets as there are operations discovered in the analysis. The operation sheet consists of, first, directions for performing the operations and, second, questions designed to help the student to know the reasons for performing the operations and to test him on the reference reading assigned. Now when the student is confronted with a particular job in the plumbing trade, he proceeds to select from the total operations those which are required in his particular, immediate job. Furthermore, he arranges these operations in their natural sequence. By consulting one operation sheet after the next and following the instructions, he completes the job. Thus, while the unit of analysis is the operation, the unit of instruction is the operation or job. In the latter case, the operation becomes one step in

the instructional unit which is the job. The learner works individually but the group may be called together for demonstrations.

According to W. W. Charters, the procedure consists of five principal steps: (1) A difficulty or duty analysis is made. For example, sales people are interviewed to discover their difficulties, or an expert in selling observes sales people for three months, two hours per day, to discover difficulties or duties. (2) The difficulties are turned into questions. For example, a sales person reports that she has difficulty with impatient customers. This is turned into the question: "How do you handle difficult customers?" (3) Expert persons are interviewed to discover their specific methods of overcoming difficulties. For example, in response to the question: "How do you handle an impatient customer?" the expert sales person says: "I use a soft, kindly voice." (4) The report of the interview is written soon after the interview. (5) The specific means of overcoming the difficulties are compiled and published for instructional purposes.

According to the method of C. R. Allen, the investigator analyses the trade into all the jobs one must be able to do and all the information one must have to learn the trade. He divides the trade into units having a common set of learning difficulties. He determines the causes of learning difficulties which in turn affect the order of instruction. The learning difficulties may then be organized on successive levels. The objectives are stated for each unit of jobs and for each level of difficulty. He arranges the jobs in instructional order. He prepares instruction sheets for each job. The instruction sheet contains a statement of the objective, sketches of the work at various stages of progress, the order of operations, and questions requiring reasoning about the operations.

Assignment

The class meeting will consist of reports and criticisms of the investigations given below. Select one of the following references and be prepared to report on: (1) the purpose of the investigation; (2) the method of the investigation; (3) the results of the investigation; (4) a criticism of the investigation. Read as many references as you can in addition to the one on which you report.

Readings

Allen, C. R. — *The Instructor, the Man, and the Job,* Pt. II, Lippincott, 1919.

Barr, A. S. — *An Analysis of the Duties and Functions of Instructional Supervisors;* University of Wisconsin Bureau of Educational Research, Bulletin No. 7, January, 1926.

Brett, F. H. — "An Analysis of the Homemaker's Job"; *Vocational Education Magazine.*

California, University of — Publications of the Division of Vocational Education:

An Analysis of Department Store Occupations for Juniors.

Berry, R. E. — *An Analysis of Clerical Positions for Juniors in Railway Transportation.*

—— *The Work of Juniors in the Telegraph Service.*

—— *The Work of Juniors in Retail Grocery Stores.*

Jessup, E. and Blanchard, C. — *An Analysis of the Work of Juniors in Banks.*

Stier, L. G. — *Analysis of the House Carpenters' Trade.*

Charters, W. W. — *Curriculum Construction,* pp. 88–93, Macmillan, 1923.

—— "A Technique for the Construction of a Teacher-Training Curriculum"; *Journal of Educational Research,* March, 1927, pp. 176–180.

—— "The Traits of Homemakers"; *Journal of Home Economics,* December, 1926, pp. 673–685.

—— and Whitley, I. B. — *Analysis of Secretarial Duties and Traits,* pp. 19–35, Williams and Wilkins, 1924.

DYER, E. — "Merchandise Information"; in Charters, W. W. — *Curriculum Construction*, pp. 285–287.

FEDERAL BOARD FOR VOCATIONAL EDUCATION —

(*a*) Bulletin No. 95; *Bricklaying Industry*

(*b*) Bulletin No. 75; *Poultry Industry*

(*c*) Bulletin No. 67; *Pottery Industry*

(*d*) Bulletin No. 102; *Paper Hanging*

(*e*) Bulletin No. 54; *Survey of Junior Commercial Occupations*

FLOWERS, I. V. — "The Duties of the Elementary School Principal"; *Elementary School Journal*, February, 1927, pp. 414–422.

FRENCH, M. H. — "The Homemaking Vocations: A Proposed Method of Job Analysis as a Basis of Courses of Instruction and Training"; *Vocational Education Magazine*, November, 1922, pp. 211–214.

JONES, A. J. — "Job Analysis of Teaching"; *Educational Monographs*, Society of College Teachers of Education, No. 10. (Also in Charters, W. W. — *Curriculum Construction*, pp. 339–344.)

JONES, W. B. — *Job Analysis and Curriculum Construction in the Metal Trades Industry*, Teachers College, 1926.

KITSON, H. D. — "Trade and Job Analyses as an Aid in Vocational Curriculum Building"; *Twenty-third Yearbook of the National Society for the Study of Education*, Pt. II, pp. 237–255.

O'LEARY, I. P. — "Standards of Accomplishment in Home Economics Instruction"; *Vocational Education Magazine*, October, 1923, pp. 123–127.

SELVIDGE, R. W. — *How to Teach a Trade*, Ch. 3 and 4, The Manual Arts Press, 1923.

STRONG, E. K. — "Job Analysis of the Manager in Industry"; *School and Society*, April 16, 1921. (Also in Charters, W. W. — *Curriculum Construction*, pp. 292–297.)

—— AND UHRBROCK, R. S. — *Job Analysis and the Curriculum*, pp. 30–41, Williams and Wilkins, 1923.

TYRREL, D. AND HUDELSON, E. — *A Pupil-Activity Curriculum in Stenography;* University of Minnesota Education Research Bulletin, Vol. XXIX, No. 17, April 10, 1926.

WILKES, F. A., YORK, G. M., AND FURNEY, O. — *Commercial Subjects in Part-time or Continuation School*, Williams, 1922.

EIGHTEENTH MEETING

PRACTICE IN THE METHOD OF JOB ANALYSIS

We shall undertake to make a simple analysis of a job. The student who undertakes a major problem involving job analysis will undoubtedly exercise great care and precision in carrying out the details as described by the experts in job analysis. Here it is possible only to have an introduction to the method.

Carry out any of the following analyses. Be prepared to report in class on (1) the purpose, (2) the method, (3) the results, (4) a criticism of your analysis and of the general method.

1. Using a simple technique described in your reading, list the steps performed by you in a small job, or subdivision of a job, such as teaching, coaching, gardening, changing an automobile tire, repairing a leaky faucet, making a concrete walk, putting in a new window glass, caring for the furnace, making a bibliography, using a mimeograph machine, conducting assemblies, preparing a manuscript for publication, painting the exterior of a house, upholstering a chair, installing a radio, etc. Restate the steps as a series of objectives to be achieved as a result of a short course of training.

2. Ask your sister, brother, daughter, son, or any child to list the duties he performs in helping to maintain the home. Do the same for a number of children. Tabulate the duties and state them as a series of objectives of training for the duties of the home.

3. Assume that your maid threatens to leave you and that it will be necessary to divide her duties among the members of the family. Proceed to make a rough analysis of her duties.

4. The job of running an automobile involves a great many elements most of which are not difficult. Make a

list of the chief difficulties in running an automobile and restate them as objectives of training which every prospective automobile owner should have.

5. Every teacher has several student assistants. Make a list of the duties to be performed by your student assistants which you can put into their hands when they undertake their work at the beginning of the semester.

6. Your principal maintains that it is not necessary to engage a young person to care for and distribute laboratory material. You wish to show him that it involves much time, labor, and a great variety of operations. List the operations performed by you in maintaining and distributing laboratory supplies. After each item indicate the time it takes and the amount of intelligence (little, medium, much) needed to perform the operation.

7. You are about to change positions. You have performed certain indispensable duties as chairman of social activities committee, athletic coach, dramatic coach, dean of women, school visitor, faculty representative in student council, chairman of committee on admissions, school psychologist, director of the glee club, advisor to the school paper, etc. You are asked to give a complete list of your duties in order to make it easy for your successor to take them up and do them as efficiently as you did.

PART III

DETERMINING OBJECTIVES FROM SECONDARY DATA

NINETEENTH MEETING

DETERMINING OBJECTIVES BY ANALYSIS OF SECONDARY DATA

The preceding methods of determining objectives consisted of direct analyses of the activities or needs of the learner. Such analyses can be made only at great cost of time and money, involving the coöperation of many persons.

There is a great wealth of quantitative data already in existence which describes the actual habits of the people, their activities, their deficiencies, their needs, and so on. Often, therefore, it is a considerable short-cut in curriculum making to analyze such secondary data for the purpose of discovering educational objectives. Such secondary data have included newspapers, magazines, books, social documents, social statistics, political platforms, and the like.

For the present, therefore, we have divided this general method into two parts: (1) analyses of newspapers and magazines and (2) analyses of social statistics and social documents. In the second class, we have arbitrarily included books as indices of social conduct.

Analyses of Newspapers and Magazines

We are now ready to consider in detail the first of the two types of analyses of secondary data. The use of magazines and newspapers as data describing social conduct was first recommended by Dr. Bagley. Since then, several applications of this method have been made by a number of investigators in almost all of the formal school subjects. It is

interesting to observe that several of Professor Bobbitt's students have made analyses of newspapers and magazines to determine educational objectives. It is interesting, too, that the method has been employed in making actual courses of study for the public schools.

To read newspapers, magazines, and books intelligently is a universal need. Therefore, to a certain degree, an analysis of the vocabulary, scientific terms, quantitative elements, etc., found in newspapers and magazines is a direct analysis of the needs of the learner. In other words, analyses of newspapers give direct data for training the individual to *read the newspaper*. As a matter of fact, newspapers and magazines have been studied in order to determine courses of study in arithmetic, biology, history, civics, and geography. The assumption is that the newspaper mirrors life. If an experience is frequently recorded in the newspaper, it supposedly occurs very frequently in life. Upon this assumption, this method of determining objectives must stand or fall.

There are obvious objections to the validity of this assumption. Newspapers have a political, social, religious, or economic bias. They reflect the exceptional or sensational events. They write down to the ability, tastes, and interests of the group a little below the average of intelligence. They do not touch certain important, fundamental fields at all.

At best the analyses of newspapers and magazines should be used as a supplementary source of objectives, and even then only if certain cautions are observed. The newspapers selected should represent the balanced view of the community. They should cover a long period of time to avoid the emphasis of a temporary interest such as a war. The activities, habits, deficiencies, or needs should be checked against some standard of good living.

Assignment

Select one of the following references dealing with your field and make a written report on (1) the purpose of the investigation, (2) the method of investigation, (3) the results of the investigation, and (4) a criticism of the investigation. In addition, read several other investigations. For purposes of class discussion, the report should be made without notes as far as possible.

Readings

HEALTH

Bobbitt, F. — "Discovering the Objectives of Health Education"; *Elementary School Journal*, June, 1925, pp. 755–762. An analysis of the elements of health upon which newspaper readers seek advice.

MATHEMATICS

Bobbitt, F. — "The Technique of Curriculum-Making in Arithmetic"; *Elementary School Journal*, October, 1924, pp. 133–143. (Also in Department of Superintendence — *Third Yearbook*, pp. 61–62.) An analysis of elements of arithmetic found in newspapers.

Scarf, R. C. — "The Mathematics Used in Popular Science"; in Bobbitt, F. — *Curriculum Investigations*, Ch. 13. An analysis of the science articles in a random sampling of five general magazines and three books of popular science.

SCIENCE

Curtis, F. D. — "A Study of the Vocabulary of Scientific Articles Appearing in Daily Newspapers"; *School and Society*, June, 1926, pp. 821–824.

—— *Some Values Derived from Extensive Reading of General Science*, pp. 10–27, Teachers College, 1924.

Finley, C. W. and Caldwell, O. W. — *Biology in the Public Press*, Teachers College, 1923. (Also in Department of Superintendence — *Third Yearbook*, pp. 301–302.)

HOPKINS, L. T. "A Study of Magazines and Newspaper Science Articles with Relation to Courses in Science for High School"; *School Science and Mathematics*, November, 1925, p. 793.

SEARLE, A. H. AND RUCH, G. M. — "A Study of Science Articles in Magazines"; *School Science and Mathematics*, April, 1926, pp. 389–396.

SOCIAL STUDIES

BAGLEY, W. C. — "The Determination of Minimum Essentials in Elementary Geography and History"; *The Fourteenth Yearbook of the National Society for the Study of Education*, Pt. I, pp. 131–139. (Also in Charters, W. W. — *Curriculum Construction*, pp. 262–267, and in Department of Superintendence — *Third Yearbook*, pp. 235–239.)

CHARTERS, W. W. — *Curriculum Construction*, pp. 270–272, Macmillan, 1923.

DAVIS, M. B. — "Topics to be Included in Instruction in Civics as Indicated by an Analysis of Current Periodicals"; Department of Superintendence — *Third Yearbook*, pp. 231–232.

DULEBOHN, I. H. — "Civic and Social Shortcomings as Curriculum Indices"; in Bobbitt, F. — *Curriculum Investigations*, Ch. 8. An analysis of the deficiencies found in the editorials of nine newspapers on the odd-numbered dates from December to February 1925 and in the editorials of six magazines for the same period.

NASON, J. M. — "International Relations as Revealed by Editorials, Cartoons, and Textbooks in American History"; Department of Superintendence — *Fifth Yearbook*, pp. 230–231. An analysis of 124 editorial pages, 1057 cartoons, and seven textbooks.

NIETZ, J. A. — "Duties and Traits of a Good Citizen"; in Bobbitt, F. — *Curriculum Investigations*, Ch. 7. It includes an analysis of the editorials of 168 issues of seven leading newspapers covering a period of four years and 55 special articles on citizenship published in eighteen leading magazines and bulletins during the last five years.

WASHBURN, C. W. — "Basic Facts Needed in History and Geography"; *The Twenty-Second Yearbook of the National Society for the Study of Education*, Pt. II, pp. 216–233. (Also in Department of Superintendence — *Third Yearbook*, pp. 251–253.)

WELLS, C. O. — "The Political Science of Everyday Life as Revealed by an Analysis of Newspapers and Periodicals"; Department of Superintendence — *Fifth Yearbook*, pp. 232–235.

TWENTIETH AND TWENTY-FIRST MEETINGS

PRACTICE IN ANALYSIS OF NEWSPAPERS AND MAGAZINES

The student is required to make two sample investigations to be submitted in writing on two successive meetings. The oral report, however, should be made as far as possible without the use of notes. The report should include (1) the purpose of the investigation, (2) the method of the investigation, and (3) the results of the investigation, expressed in terms of objectives.

1. Select a subject such as geography, health, mathematics, biology, or history, then go through one issue of a newspaper or magazine and tabulate the references, activities, or deficiencies found, pertaining to your special field. State your results in terms of educational objectives.

2. Read one issue of your local newspaper and list the localities mentioned. Tabulate them and state your conclusions in terms of educational objectives.

3. Read an issue of the local newspaper and list the articles which pertain to economic and industrial life. Tabulate your findings and state your conclusions in terms of educational objectives.

4. Read an issue of a magazine such as *Time*, *The Literary Digest*, *Outlook*, etc., and tabulate the political elements

which are discussed. State your conclusions as educational objectives.

5. Read the week's issues of some newspaper containing a health column and tabulate the elements upon which the readers seek advice. State your conclusions in terms of educational objectives.

6. Read one issue of a newspaper and tabulate arithmetical terms found in it. State your conclusions in terms of educational objectives.

7. Read the editorials in three newspapers for several days and tabulate the political advice contained in them. State your conclusions in terms of educational objectives.

8. Read the headlines of a newspaper for a month. List the economic, political, or social deficiencies mentioned. Tabulate them and propose the educational objectives which emerge.

9. Read the sporting pages of the newspaper for a month and tabulate the recreational activities which are mentioned. Your conclusions should be stated in terms of objectives.

10. Read one issue of a newspaper and tabulate all cases of social harmony and social antagonism. State your conclusions in terms of objectives.

11. Read the headlines of a newspaper for a week and tabulate all references to disputes between Capital and Labor. State your conclusions in terms of objectives.

12. Read the advertisements in two issues of a newspaper and tabulate the materials of clothing mentioned. State your conclusions in terms of objectives.

13. Read the dramatic criticisms in the newspaper for a week and tabulate the uncommon terms used. State your results in terms of objectives.

14. Read the art criticisms in a metropolitan daily for a week. Tabulate the elements of art mentioned and state your results in terms of objectives.

TWENTY-SECOND MEETING

DETERMINING OBJECTIVES BY ANALYSIS OF SOCIAL STATISTICS AND DOCUMENTS

We are here concerned with statistics, public documents, surveys, books, and the like as evidence of the habits of living of people. Such data have long been used by the legislator, the social worker, the economist, and others. The student of education has been rather slow in realizing their value. It is the duty of the student of education to study the conditions of life as found in documents and statistics and to assume his share of the responsibility for the improvement of the habits of living along with other persons engaged in public work.

Government agencies publish data describing habits of living: the Department of Agriculture furnishes statistics on food; the United States Bureau of Labor publishes data on social and industrial conditions; the United States Geological Survey publishes data concerning fuels; the United States Bureau of Public Health publishes statistics on public health; Chambers of commerce, real estate boards, merchants' associations, large business associations, trade associations, trade unions, philanthropic societies, research bureaus, public welfare agencies, state departments, municipal bureaus, and so on are constantly turning out information which is a more or less accurate account of the activities of the people. Let us illustrate how social statistics may be used in making a health course of study in a large city.

In connection with the revision of a course of study in health for high school girls in the city of Cleveland, it was not possible to make a direct analysis of the health activities and needs of the pupils. However, a considerable amount of quantitative data was available, describing the actual health conditions and needs of young women of approximately the same character as the pupils.

The data were of several kinds. They included studies of sickness among women and girls of the city of Cleveland and elsewhere; studies of the most common defects among women and girls in Cleveland and elsewhere; studies of minor ailments among women and girls in Cleveland and elsewhere; occupational data concerning women and girls; and certain miscellaneous data. As the result of the analysis of these data it was possible to conclude what specific defects will most commonly require attention, what specific common ailments will most frequently need to be treated in the home, and so on. For example, when it was found that the cold occurs more frequently than any other ailment, it became clear that it will most commonly require prevention and cure. When it was found that tuberculosis was more common among young women than among any other age group, male or female, the prevention of tuberculosis emerged as a particularly important objective of health education for high school girls. While goiter may receive only passing attention in the health course of the schools of an average community, it became particularly important in Cleveland where it ranked approximately third among common physical defects.

It should be remembered that this method is not an analysis of actual conditions or needs but of data which describe these conditions and needs. Surveys of actual conditions and needs are possible only within certain narrow fields and require much effort and the coöperation of many persons. Therefore, it is sometimes necessary to collect the available data describing actual conditions and needs. In using social statistics and public documents, it is necessary for the investigator to discover standards of good living in order to determine what the needs of the people are. Frequently not enough data are available — in which case, it is necessary to supplement the analysis of social statistics and

documents by other methods, which will be discussed later. Not all social documents are of equal reliability. It is obvious that, in the selection of data, one must exercise the customary scrutiny necessary in any investigation. There is the usual possibility here of misinterpretation and misrepresentation, against which the scrupulous investigator will naturally guard.

Books are included here arbitrarily because, in a sense, they are a kind of a social document, but they should be used with great caution. It should be remembered that books vary in reliability. They frequently are formal statements of opinion. An analysis of books may be no better than a concensus of opinion.

Assignment

The following references are applications of the method just described. Select one and prepare a written report giving (1) the purpose of the investigation, (2) the method of the investigation, (3) the results of the investigation, and (4) a criticism of the investigation. The oral report in class should be made, as far as possible, without the use of notes.

Readings

HEALTH

Cairns, L. — "Public School Health Courses Need Radical Reorganization"; *The Nation's Health*, May, 1926, pp. 319–320.

Harap, H. — "Disease Data Determine Emphasis in Health Course"; *The Nation's Health*, October, 1926, pp. 665–667.

Lerrigo, M. O. — *Health Problem Sources*, Teachers College, 1926. Analysis of mortality statistics, the publications of the United States Public Health Service, annual reports of the surgeon-general of the United States, reports of public health associations, textbooks by competent authorities, and publications of life insurance companies.

LANGUAGE

HORN, E. — "A Study of Library Withdrawals and Books Published"; *Twenty-second Yearbook of the National Society for the Study of Education*, Pt. II, pp. 235–239. (Also in Department of Superintendence — *Third Yearbook*, pp. 275–277.)

MATHEMATICS

MITCHELL, H. E. — "Some Social Demands on the Course of Study in Arithmetic"; *Seventeenth Yearbook of the National Society for the Study of Education*, Pt. I, pp. 7–17. (Also in Department of Superintendence — *Third Yearbook*, pp. 48–49.)

THORNDIKE, E. L. — *The Psychology of Algebra*, Ch. 2, Macmillan, 1924. A study of the references to mathematics in the first two hundred pages of each of the twenty-eight volumes of the Encyclopædia Brittanica.

WOODY, C. — "Types of Arithmetic Needed in Certain Types of Salesmanship"; *Elementary School Journal*, March, 1922, pp. 505–521. (Also in Department of Superintendence — *Third Yearbook*, pp. 50–52.)

SOCIAL STUDIES

BASSETT, B. B. — "The Content of the Course of Study in Civics"; *Seventeenth Yearbook of the National Society for the Study of Education*, Pt. I, pp. 63–80. (Also in Charters, W. W. — *Curriculum Construction*, pp. 308–310, and in Department of Superintendence — *Third Yearbook*, pp. 228–231.)

BIXLER, G. K. — "Social Problems of the Labor Group"; in Bobbitt, F. — *Curriculum Investigations*, Ch. 9. Analysis of ten widely used books which deal with labor problems, and seven periodicals.

BOBBITT, F. — *Curriculum Investigations*, Ch. 10, University of Chicago Press, 1926. Three investigators examined eighteen books of literary essays to discover the good and bad characteristics of human conduct.

BRANOM, M. E. AND REAVIS, W. C. — "The Determination and Measurement of the Minimal Essentials of Elementary School Geography"; *Seventeenth Yearbook of the National Society for the Study of Education*, 1918, Pt. I, pp. 27–39. (Also in Department of Superintendence — *Third Yearbook*, pp. 263–265.)

HARAP, H. — *The Education of the Consumer*, pp. 4–11, Macmillan, 1924. (Also in Department of Superintendence — *Third Yearbook*, pp. 269–273.)

LORENZEN, C. H. — "Approved Social Behavior"; in Bobbitt, F. — *Curriculum Investigations*, Ch. 11. An analysis of eleven books on social ethics, one hundred twenty-three articles in the *American Magazine* on social ethics, and six books of etiquette.

RUGG, H. O. — "Problems of Contemporary Life as the Basis for Curriculum Making in the Social Studies"; *The Twenty-second Yearbook of the National Society for the Study of Education*, Pt. II, pp. 260–273. (Also in Charters, W. W. — *Curriculum Construction*, pp. 311–313, and in Department of Superintendence — *Third Yearbook*, pp. 221–225.)

—— AND HOCKETT, J. — *Objective Studies in Map Location*, Teachers College, 1924. (Also in Department of Superintendence — *Third Yearbook*, pp. 233–235.)

SWISHER, J. A. — "The Historical Information Essential for the Intelligent Understanding of Civic Problems"; *Seventeenth Yearbook of the National Society for the Study of Education*, Pt. I, pp. 81–89. (Also in Department of Superintendence — *Third Yearbook*, pp. 246–249.)

TWENTY-THIRD MEETING

PRACTICE IN ANALYSIS OF SOCIAL STATISTICS

1. Analyze the last city, state, or national platforms of the several political parties. Tabulate the changes which are proposed. Restate them as objectives to be achieved by school activity.

2. Analyze six issues of the *United States Monthly Labor Review* (published by the United States Bureau of Labor) for one major topic, such as housing, wages, etc. Tabulate the facts or figures that you find. Draw what conclusions you can to show what the school should undertake to accomplish. State your conclusions as educational objectives.

3. Collect any available health statistics, such as the local prevalency of physical defects, city sickness surveys, morbidity data, etc. They will show certain, specific health deficiencies. Tabulate them and state your results as educational objectives.

4. Collect any statistics you can concerning the reading habits of the people, such as are shown in the weekly announcement of best sellers, the statistics of the American Library Association, the circulation of certain magazines, etc. Draw conclusions from this data concerning the reading habits of the people and state them as objectives.

5. Collect the platforms on social action of the several national religious bodies. Tabulate the elements of social reform which are proposed. State them as objectives of education.

6. Examine Crain's *Market Data Book and Directory* which gives important trade statistics for each industry. Gather the facts for one major topic such as value of the products, number of persons employed in the industry, etc. These facts will show the relative importance of the industries or their products. Draw any conclusions that you can and state them as objectives of education.

7. Examine all the data for one major topic, such as population or consumption, in the *Statistical Abstract of the United States*. Certain facts will appear which should form the basis of changes to be achieved by education. Tabulate the facts and state your conclusions as objectives.

8. Examine M. L. Stecker's *Some Recent Morbidity Data.*

This is a summary of seven community sickness surveys made among policy holders of the Metropolitan Life Insurance Company. Draw what conclusions you can concerning the health needs of these communities. State your conclusions in the form of objectives.

9. Examine Circular 70 of the United States Bureau of Standards entitled *Materials for the Household.* You should find certain common defects in the selection and use of household materials. State your conclusions as educational objectives.

10. Examine S. S. Wyer's *Waste and Correct Use of Natural Gas in the Home,* United States Bureau of Mines, Technical Paper, 257. Draw your conclusions and state them as objectives.

11. The United States Bureau of Foreign and Domestic Commerce publishes a volume, entitled *Foreign Commerce and Navigation of the United States,* which shows the quantity of imports from and exports to the various countries. Tabulate some of these data and draw certain conclusions concerning international relations and international trade. State your conclusions as educational objectives.

TWENTY-FOURTH MEETING

DETERMINING OBJECTIVES FROM OPINIONS EXPRESSED BY COMPETENT PERSONS

According to this method, the opinions of competent persons are sought to determine what the purposes of education shall be. This method is one of the earliest of the procedures employed to determine objectives. It was used by Dr. Bobbitt of the University of Chicago who carried on an extensive collection of the opinions of his students and other persons over a period of ten years. This yielded the first

broad survey of the major fields of life and their correlative fields in education. This work of making a broad survey is about done and Dr. Bobbitt himself has resorted to the use of an inductive study of quantitative data to discover the major fields of life activity. Few of the more recent good studies are based upon opinion only.

It is equally applicable to all branches of study in which competent persons are available. As a major source of objectives, it is hardly as reliable as an objective study of the actual needs of the learner. When opinion is resorted to exclusively, there is no assurance that the most important objectives will be included, that the judges are competent, that the judges know what is most useful, and that the data are not a concensus of prejudices.

However, there are occasions when objective data are not available. Then the opinion of competent persons is far superior to a personal selection of objectives. As a matter of fact, the degree of validity of the method whether used properly or not depends entirely upon the technical competency of the judges and their ability to judge in an objective and unbiased way. There are times when the study of the actual needs gives incomplete data, making it necessary to supplement them by opinion of competent persons. For example, health statistics may not reveal all the physical deficiencies which need to be corrected. In that case, it would be necessary to rely upon the opinion of physicians, parents, and teachers.

Sometimes a study of objective data fails to reveal certain intangible goals which may be discovered by a supplementary study of opinions. For example, an analysis of the recreational activities may show that the mass of people engage extensively in competitive athletics. It is quite possible that competent opinion would reveal that the present emphasis upon competitive athletics ought to be decreased.

The method has the special advantage of enlisting the coöperation of persons in the community in making the policies of a school. When, as in many cases in the past, the competent persons are exclusively members of the teaching corps, it has the advantage of interesting them in the enterprise of reconstructing courses of study and winning their support for the revised course of study.

Assignment

The method presented here is discussed in Dr. Bobbitt's *How to Make a Curriculum*, pp. 5–6, 7–11, and Chapter 3. The student is advised to read this reference. In addition, select one of the following references in your field and submit a written report on (1) the purpose of the investigation, (2) the method of the investigation, (3) the results of the investigation, and (4) a criticism of the method. In making the oral report to the class, the student should dispense with notes as far as possible.

Readings

HEALTH

Curtis, H. S. — "Relative Values of Physical Activities in High Schools"; *School Life*, May, 1925, p. 161.

LANGUAGE

Pendleton, C. S. — *The Social Objectives of School English.* Published by the author, 1924. (Also in Department of Superintendence — *Third Yearbook*, pp. 286–289.)

"Report of Committee on Place and Function of English in American Life"; *English Journal*, February, 1926, pp. 110–134. A study of the language activities of 2,615 persons in 253 occupations.

Searson, J. W. — "Determining a Language Program"; *English Journal*, February, 1924, pp. 99–114. (Also in Department of Superintendence — *Third Yearbook*, pp. 285–286.)

MATHEMATICS

JESSUP, W. A. — "Economy of Time in Arithmetic"; *Elementary School Journal*, November, 1914, pp. 162–166. Opinions of superintendents on topics of arithmetic to be eliminated.

MOORE, E. C. — *Minimum Course of Study*, pp. 1–41, Macmillan, 1922. (Also in Department of Superintendence — *Third Yearbook*, pp. 55–56.) Content of arithmetic in the opinion of California educators and business men.

NATIONAL COMMITTEE ON MATHEMATICS REQUIREMENTS — *The Reorganization of Mathematics in Secondary Education*, pp. 45–46. A number of prominent college teachers estimate the value of certain items of mathematics.

REEVE, W. D. — "Objectives in the Teaching of Mathematics"; *Mathematics Teacher*, November, 1925. Specific objectives in the opinion of mathematics teachers.

WILSON, G. M. — *Connersville Course in Mathematics*, Connersville Public Schools, 1911. Republished by Warwick and York, 1922. (Also in Charters, W. W. — *Curriculum Construction*, pp. 213–216, and in Department of Superintendence — *Third Yearbook*, pp. 42–43.)

PRACTICAL ARTS

EDGERTON, A. H. — "Factual Basis for Curriculum Building in Junior High School Industrial Arts"; *Industrial Arts Magazine*, March, 1925.

WINCHELL, F. E. — *How Can Household Arts Teaching Be Made More Effective*, Teachers College, 1923.

SCIENCE

DAVIS, B. M. — "Summary of a Study in Agriculture in Rural Elementary Schools"; *The Nature Study Review*, January, 1913, pp. 2–13. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 131–133.) The content of a course in the opinion of 500 teachers.

GORDON, N. E. — "Report of the Committee on Chemical Education of the American Chemical Society"; *Journal of Chemical Education*, May, 1924, pp. 87–93. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 280–293.) A course in the opinion of a committee with criticisms from the field.

HUNTER, G. W. — "The Report of the Committee on a One-Year Fundamental Course of Biological Science"; *School Science and Mathematics*, October, 1923, pp. 656–664. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 254–255.) An analysis of the opinion of teachers concerning the relative importance of 98 topics in biology.

MEIER, L. — "Current Practices in the Teaching of Science in the Seventh and Eighth Grades"; *General Science Quarterly*, November, 1924, pp. 1–7. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 305–309.) An analysis of the opinion of 150 teachers on the relative importance of 75 activities.

OSBORNE, R. W. — "Fundamentals of Subject Matter"; *School Science and Mathematics*, March, 1920, pp. 240–242. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 145–146.) Determines the content of chemistry by collecting the opinions of teachers.

PEABODY, J. E. — "Outline for Sex Education in the High School"; *School and Society*, June 10, 1922, pp. 650–652. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 207–213.) The opinion of a committee of six, plus the criticism of 65 principals.

PERSING, E. C. — "Report of the Committee on Reorganization of the Biological Sciences, Appointed by the Cleveland Biology Teachers Club"; *School Science and Mathematics*, March, 1924, pp. 241–246. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 271–278.) A course in biology determined by opinion of a committee.

REUSSER, W. C. — "The Status of General Biology in High Schools of the North Central States"; *School Science and Mathematics*, March, 1923, pp. 258–261. (Also in Curtis, F. D. —

Investigations in the Teaching of Science, pp. 229–230.) Analysis of opinions obtained from 195 schools.

WATSON, C. H. — "A Critical Study of the Content of High School Physics with Respect to Its Social Value"; *School Review*, November, 1926, pp. 688–697. Six hundred parents of high school pupils give their opinions of the value of 174 items in physics contained in three textbooks.

SOCIAL STUDIES

BREEZE, R. E. — "What Constitutes Good Citizenship?" *School Review*, September, 1924, pp. 534–536. (Also in Department of Superintendence — *Third Yearbook*, pp. 227–228.)

CAMERER, A. — "What Should Be the Minimal Information about Banking?" *Seventeenth Yearbook of the National Society for the Study of Education*, Pt. I. (Also in Department of Superintendence — *Third Yearbook*, pp. 57–58.) The items of banking which persons should know in the opinion of bank officials.

COCKING, W. D. — "The Attitude of the Public to the Teaching of Citizenship"; Department of Superintendence — *Third Yearbook*, pp. 225–227.

MONROE, W. S. AND HERRIOTT, M. E. — *Objectives of United States History in Grades Seven and Eight;* University of Illinois Bulletin, Vol. XXIII, No. 3, Urbana, Illinois, 1926 (Bureau of Educational Research Bulletin, No. 33).

NIETZ, J. A. — "Duties and Traits of a Good Citizen"; in Bobbitt, F. — *Curriculum Investigations*, Ch. 7. The third part of this study consists of an analysis of the opinions of one hundred eleven "leaders of thought," mostly in Chicago, interviewed personally during the months of April, May, and June, 1925.

WHITBECK, R. H. — "Where Shall We Lay the Emphasis in Teaching Geography?" *Education*, October, 1910, pp. 108–116. (Also in Charters, W. W. — *Curriculum Construction*, pp. 260–261, and in Department of Superintendence — *Third Yearbook*, pp. 261–263.)

WOOTERS, J. E. — "Elementary American History Standards"; *School and Home Education*, 1914, Vol. 34, pp. 152–155. (Also in Charters, W. W. — *Curriculum Construction*, pp. 245–246, and in Department of Superintendence — *Third Yearbook*, pp. 262–263.)

TWENTY-FIFTH MEETING

PRACTICE IN DETERMINING OBJECTIVES FROM OPINIONS EXPRESSED BY COMPETENT PERSONS

1. Submit the following question to a half dozen of your colleagues in one field: "What, specifically, do you wish your pupils to accomplish at the end of a semester's instruction in (name of subject)? State your goals in infinitive form, as: To calculate one's dividend on a small investment." Tabulate your results and state your conclusions in terms of objectives.

2. Make a list of twenty-five specific objectives in your special field and submit them to a half dozen of your colleagues with the following directions: "Put a check before each goal which ought to be achieved by a course in (name of subject); add any goals not in the list which you would propose." Tabulate your results and state your conclusions as a final list of objectives.

3. Submit the following question to about a dozen persons: "What ought a high school pupil to know and to be able to do in keeping himself healthy?" Tabulate the results. Translate all the statements into objectives.

4. Send the following request to a half dozen business men: "What items of commercial law do you think it desirable for your employees to know?" Tabulate the results. Translate them into objectives.

5. Make a list of twenty recreational activities for adults.

Submit the list to a dozen adults with a request that they rank them in order of importance and add any others which deserve to be in the list. Tabulate your results and state your conclusions in the form of objectives.

6. Submit the following question to a half dozen literate adults: "What are the most common errors in oral speech that you hear?" Tabulate the results and state them as objectives.

7. Make a list of objectives in high school chemistry and submit them to a half dozen high school teachers of chemistry for ranking in order of importance. Tabulate your results and submit in the form of objectives.

8. Write to several college professors and ask them to answer this question: "What specific abilities should a high school course in (name of subject) accomplish for prospective college students?" Tabulate your results and state them in the form of objectives.

9. If you occupy an administrative position, obtain a list of objectives in one field from the opinions of a portion of your staff.

10. Carry out any of the studies which you have read on a small scale.

11. Carry out any original investigation in the determination of objectives by opinion of competent persons.

Questions for Discussion

What assurance have we that the consolidated lists of a large number of teachers is complete?

What assurance have we that the real needs in any field will be included in the total of opinions?

What is the chief merit of this procedure?

TWENTY-SIXTH MEETING

ANALYSIS OF EXISTING OBJECTIVES

In essence, the great output of courses of study in the last three years is the product of a rough application of this method. This does not imply that they are adequate. On the contrary, it is our purpose here to show that they are far from satisfactory. The uncritical adaptation of objectives from existing sources usually lacks supporting evidence and is incomplete and desultory. The results are unreliable.

However, the method has been pursued with considerable thoroughness by some investigators introducing certain refinements of technique which offer a great advance over a random collection of previously determined objectives. A mere count of existing objectives and the acceptance of those which are most frequently mentioned is insufficient. This amounts to no more than a multiplication of errors. A useless objective does not become any more significant when it has the unthinking support of numbers.

An improvement over a frequency count would be a selection from a limited number of courses selected by competent persons. The best use which can be made of existing objectives is, first, to list them regardless of frequency and second, to submit them to competent judges for a rating of their importance. The most important objectives could then become the basis for further selection as will be indicated later. At best it does not replace an actual analysis of the needs or the interests of the learner as a reliable basis of a course of study. The final list of objectives will consist of (*a*) the stated objectives from curriculum studies, courses of study, and textbooks and (*b*) the objectives suggested by or inferred from several good curriculum studies, courses of study, and textbooks which fail to state the objectives.

The present method of determining objectives has been dignified by several good investigations, notably the one, still in progress, by the Teachers College Bureau of Curriculum Research. The method was (1) to collect all available curriculum material, (2) to select from it the good qualities, (3) to convert these qualities into criteria of good courses of study, (4) to select a number of courses of study which ranked highest as judged by these criteria. The resulting courses of study could then be made available in many ways for use by curriculum makers.

Several excellent analyses, such as those of J. M. Glass in the junior high school field and G. S. Counts in the senior high school field were made primarily to survey existing conditions. These studies are valuable for the technique they suggest in conducting an analysis of existing curricula.

The best illustration of the technique used in making a thorough application of the present method is that of Raleigh Schorling in the field of junior high school mathematics. Incidentally, it indicates to a certain degree that an analysis of existing objectives is particularly appropriate when there are already several reliable investigations in existence in any one field. Mr. Schorling summarized the objectives contained in twenty-nine investigations; he listed the objectives or elements in seven junior high school texts; he listed the objectives contained in thirty courses of study; he listed the objectives of the National Committee on Mathematics Requirements. Thus an objective could occur in one or more of the five sources; (1) investigations, (2) textbooks, (3) courses of study, (4) national committee, and (5) the jury. If an objective occurred in three of the five sources it was included in the final list. The analysis yielded 520 objectives which were submitted to a jury of ten, five leaders in mathematics and five in general education.

Assignment

The class meeting will consist of reports by members of the class on investigations. Select one of the following references and be prepared to report (1) on the purpose of the investigation, (2) the method of the investigation, (3) the results of the investigation, and (4) a criticism of the method.

Questions for Discussion

What are the limitations of this method?

What are the advantages of this method?

How is it related to the four previous methods?

When is this method particularly appropriate?

How can some of the limitations of this method be overcome?

Readings

LANGUAGE

Bobbitt, F., Boyce, A. C., and Perkins, M. L. — "Literature in the Elementary Curriculum"; *Elementary School Teacher*, December, 1913, pp. 158–166. Analysis of literary selections in fifty courses of study.

Hosic, J. F. — "The Content of School Reading Books"; *School and Society*, February 7, 1920, pp. 179–180.

MATHEMATICS

Guiler, W. S. — *Curriculum Building in Arithmetic;* Ohio State University, Educational Research Bulletin, Vol. III, Columbus, Ohio, February 6, 1924. Analysis of elements in thirty courses of study.

—— *Objectives and Activities in Arithmetic*, Rand McNally, 1926.

Hopkins, L. T., and Paul, F. S. — "Analysis of Thirteen Series of Junior High School Textbooks"; Department of Superintendence — *Fifth Yearbook*, pp. 202–207.

SCHORLING, R. — *Tentative List of Objectives in the Teaching of Junior High School Mathematics*, Wahr, 1925.

—— AND CLARK, J. R. — "The Present Status of Mathematics in Grades Seven, Eight and Nine"; *The Mathematics Teacher*, May, 1921, p. 264.

SPAULDING, F. T. — "Analysis of the Content of Six Third Grade Arithmetics"; *Journal of Educational Research*, December, 1921, pp. 413–423.

PRACTICAL ARTS

TRILLING, M. B. AND OTHERS — *Home Economics in American Schools* (Supplementary Educational Monographs), University of Chicago, 1920.

SCIENCE

BROWN, H. E. — "The Contents of the Chemistry Laboratory Course"; *General Science Quarterly*, March, 1923, pp. 203–211. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 280–293.) A course in the opinion of a committee, with criticisms from the field.

CRECELIUS, P. — "A Report of Objectives of General Science Teaching"; *School Science and Mathematics*, April, 1923, pp. 313–319. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 231–233.) A ranking by teachers of objectives found in curriculum studies and textbooks.

MEIER, L. — "Current Practices in the Teaching of Science in the Seventh and Eighth Grades"; *General Science Quarterly*, November, 1924, pp. 1–7. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 305–309.) Analysis of the opinion of 150 teachers on the relative importance of 75 activities.

PATTERSON, A. J. — "The Present Status of Nature Study"; *Nature Study Review*, November, 1913.

REUSSER, W. C. — "The Status of General Biology in High Schools of the North Central States"; *School Science and Mathematics*, March, 1923, pp. 258–261. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 229–230.) Analysis of opinions obtained from 195 schools.

RICHARDS, O. W. — "Present Status of Biology in Secondary Schools"; *The School Review*, February, 1923, pp. 143–146. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 198–204.) An analysis of 59 courses of study.

RUCH, G. M., AND CASSMAN, L. H. — "Standardized Content in High School Biology"; *The Journal of Educational Psychology*, May, 1924, pp. 285–296. An analysis of the content of final examinations in biology given by superior teachers.

WEBB, H. A. — *A Quantitative Analysis of General Science Texts*, pp. 1–40, George Peabody College for Teachers, 1921. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 170–180.)

WECKEL, A. L. — "Are Any Principles of Organization of General Science Evidenced by the Present Textbooks in the Subject?" *School Science and Mathematics*, January, 1922, pp. 44–51. (Also in Curtis, F. D. — *Investigations in the Teaching of Science*, pp. 198–204.) An analysis of fourteen textbooks in general science.

SOCIAL STUDIES

HARAP, H. — "Objectives of Social Studies in the Elementary Grades"; Department of Superintendence — *Fourth Yearbook*, pp. 374–378.

RUGG, H. — "An Analysis of Social Science Textbooks"; Department of Superintendence — *Third Yearbook*, pp. 256–261.

SEVERAL SUBJECTS

COUNTS, G. S. — *The Senior High School Curriculum*, University of Chicago, 1926. Devotes a chapter to each subject. The analysis of mathematics courses is given in detail.

DYER, S. — "Objectives in the First Three Grades"; *Childhood Education*, April, 1926, pp. 384–391.

GLASS, J. H. — *Curriculum Practices in the Junior High School and Grades V and VI*, University of Chicago, 1924. Contains a chapter on each subject.

TWENTY-SEVENTH MEETING

MAKING A BIBLIOGRAPHY

In determining objectives by an analysis of existing objectives, an important preliminary step is to collect all the available sources in a given field. We shall, therefore, pause to have some practice in the making of a complete and thorough bibliography of curriculum studies and other sources of objectives.

The first step is to assemble all the references. Some experience in making bibliography in the field of curriculum making has taught us that the following procedure is most economical:

1. Go through the general bibliographies in curriculum making and select those which pertain to your field. The following are the general bibliographies which have come to our attention:

Baldwin, B. T. — *Educational Research;* United States Bureau of Education Bulletin, 1924, No. 13, pp. 551–562.

Briggs, T. N. — "A Partial Bibliography on Curricula"; *Teachers College Record,* November, 1925, pp. 205–223. This is an annotated bibliography with special emphasis on the junior and senior high school.

Hudelson, E. — *Curriculum Making,* University of Minnesota, Educational Research Bulletin, January, 1924.

Monroe, W. S. — *Making a Course of Study;* University of Illinois Bulletin, Vol. XXIII, No. 2, September 19, 1925, pp. 18–35 (Educational Research Circular No. 35).

National Education Association — *Research Bulletin,* Vol. III, Numbers 4 and 5, September and November, 1925. Contains a general bibliography, also subject bibliographies.

Sharp, L. A. — *Problems in Curriculum Construction.* Contains a general bibliography, also subject bibliographies.

2. Go through the subject bibliographies in your field and select the titles which you think contain the material you wish. The assumption is that the student is familiar with his subject bibliographies or that he knows where to locate them. The following subject bibliographies have come to our attention:

LANGUAGE

GRAY, W. S. — *Summary of Investigations Relating to Reading*, pp. 215–270, University of Chicago Press, 1925.

MATHEMATICS

BUSWELL, G. T. AND JUDD, C. H. — *Summary of Educational Investigations Relating to Arithmetic*, pp. 166–205, University of Chicago Press, 1925. Annotated.

HERRIOTT, M. E. — *How to Make a Course of Study in Arithmetic;* University of Illinois Educational Research Circular, No. 37, October 12, 1925, pp. 45–50.

SCHORLING, R. — *A Tentative List of Objectives in the Teaching of Junior High School Mathematics*, pp. 138–139, Wahr, 1925.

SCIENCE

CURTIS, F. D. — *A Digest of Investigations in the Teaching of Science in the Elementary and Secondary Schools*, Blakiston, 1926.

GLENN, E. R. — *Bibliography of Science Teaching in Secondary Schools;* United States Bureau of Education, Bulletin, 1925, pp. 215–270.

SOCIAL STUDIES

RUGG, E. — "A Selected and Annotated Bibliography"; *The Twenty-second Yearbook of the National Society for the Study of Education*, pp. 305–309.

3. Some of the general books on the curriculum devote a separate chapter to each of the school subjects. At the end of the chapter one sometimes finds a bibliography.

4. Four volumes have appeared which not only list the important curriculum investigations but also give complete summaries of these investigations. It is impossible to make a list of sources of objectives without using them. They are: Charters, W. W. — *Curriculum Construction*, Macmillan, 1923. Department of Superintendence, — *Third Yearbook*, 1925, *Fourth Yearbook*, 1926, *Fifth Yearbook*, 1927.

5. Summaries of investigations in special subjects include curricular investigations. The student should examine them for possible sources of objectives. The summaries available thus far have been included under paragraph 2.

6. General books on special methods usually contain references to curriculum studies. The student who is a specialist in his field knows these books. For example, *Silent and Oral Reading* by C. R. Stone is probably familiar to the teacher of reading.

7. There are one or more journals in every field. Go through the index of the journal in your field for several years back and select possible useful references. For example, if you are working in the field of science you should consult the index of *School Science and Mathematics* for the last three years or more.

In recording one's references it is important to give attention to the form in which they are stated. For complete information on making a bibliography the reader should consult one of the several handbooks of style, such as that published by the University of Chicago. Here only a few necessary details will be given. There are three principal entries which the student will have to make: (1) books; (2) articles; (3) bulletins. It should be remembered that when in doubt it is always wiser to give too much information than too little. Only in that way will the reader or a librarian ferret out a particularly obscure reference.

BOOK REFERENCE

A book reference should include; (1) author's name and initials, (2) title of the book, (3) exact pages or chapters unless the entire book is referred to, (4) publisher, (5) year of publication. The initials are necessary in order to find the exact author when he has a common name such as Smith. The date of publication is necessary to show how recent the book is, especially when there is more than one edition. The exact pages are necessary in order to conserve the reader's time, especially when there is an error in the name or title. The following is an illustration of a book reference: CHARTERS, W. W. — *Curriculum Construction*, pp. 45–56, Macmillan, 1923.

ARTICLE REFERENCE

An article reference should include (1) the author's name and initials, (2) the title of the article enclosed in quotation marks, (3) the name of the periodical, (4) the date of the issue, (5) the exact pages. An article, paper, or chapter by any one of a number of authors should be treated as an article reference. The author's name should be given because it identifies the article. The title of the article is a clue to the contents. The name of the periodical, the date of the issue, and the exact pages are necessary in locating the reference. The following is an illustration of two article references: (1) BRIGGS, T. H. — "A Partial Bibliography of Curricula"; *Teachers College Record*, November, 1925, pp. 205–223. (2) RUGG, E. — "A Selected and Annotated Bibliography"; *The Twenty-second Yearbook of the National Society for the Study of Education*, pp. 305–309.

BULLETIN REFERENCE

Bulletin references are hardest to record and hardest to locate. Therefore, one should take pains to give a sufficient

amount of information. They are recorded in library catalogues under different parts of the title, making it necessary to give all parts in order to be sure to find it. Bulletins are published chiefly by government agencies, universities, and societies. Sometimes there are several series of bulletins by the same government agency, university, or library. The reference should give a clue to the series. A bulletin reference should include (1) the author's name, (2) the title of the bulletin, (3) the name of the publishing agency, (4) any other distinguishing information, (5) the date of publication, (6) the exact pages. The following is an illustration of two bulletin references: (1) BALDWIN, B. T. — *Educational Research;* United States Bureau of Education, Bulletin, 1924, No. 13, pp. 551–562. (2) MONROE, W. S. — *Making a Course of Study;* University of Illinois, Bulletin, Vol. XXIII, No. 2, September 19, 1925 (Educational Research Circular No. 35), pp. 18–35.

When the references have been collected, they are ready to be organized in a way which makes them most useful. Grouping references under major headings increases their usefulness. The references under each heading may be organized, first, in order of importance; second, in alphabetical order; third, in chronological order. The order of importance is of value in directing the reader to the most significant sources first. The alphabetical order is an additional aid in using the bibliography. The chronological order is of value in giving an outline of the development of the subject. For guidance the student may refer to the sectional and general bibliography in this book.

ASSIGNMENT

Make a bibliography of all sources of objectives in your special field, following as far as possible the procedure just outlined. The completeness of the bibliography will depend

upon the student's time and interest. A complete job is impossible in the several hours which the student can devote to this assignment. The class meeting will consist of a discussion of the general sources of information on curriculum making, on sources of information in the special fields as reported by the class, and on difficulties and problems in making the bibliographies as reported by the class.

TWENTY-EIGHTH MEETING

PRACTICE IN ANALYZING EXISTING OBJECTIVES

By this time the student has accumulated an extensive list of references which are likely to contain objectives of education in his particular field. His present task is to assemble the objectives and to get them ready for the process of selection and elimination.

The first general source of objectives is curriculum studies. Whenever the results of these studies are stated very definitely as objectives the student need only copy them, remembering to adhere to a common form (infinitive, noun, verb, or participle). Some investigations do not state the results as objectives. The student will have to translate the results into objectives.

The second source of objectives is existing courses of study. When the objectives of a good course of study are not stated it will be necessary to infer them. For example, a course of study in elementary science gives a lesson to flowers seen in the early spring but does not state the objective of the lesson. The inference is that the objective is "to identify flowers seen in the early spring."

The third source of objectives is textbooks, which rarely state objectives. Therefore, if textbooks are used the

student will almost invariably have to infer them. When the objectives have been conveniently arranged they are ready for any kind of sifting process which the curriculum maker may propose.

Assignment

Examine as many (1) curriculum studies, (2) courses of study, and (3) textbooks in your field as possible within the available time. Assemble the objectives in a conveniently organized list. State the objectives in a common form, either infinitive, noun, verb, or participle. Do not include any objectives which are too general. Proceed to select a partial final list on the basis of one or more criteria which you propose. The class meeting will consist of (1) a criticism of the general method, (2) difficulties and problems arising from the method, and (3) an evaluation of the material available in each field.

PART IV

ORGANIZING OBJECTIVES

TWENTY-NINTH MEETING

ORGANIZING THE OBJECTIVES UNDER MAIN HEADINGS

You will recall that the last step in the process of curriculum making was to determine the educational objectives. We took several meetings to discuss the several methods of determining objectives. Now that the objectives have been determined, what is the next step?

Determine the main headings under which the objectives fall and organize the latter.

For any one subject or phase of life there may have been a large number of objectives which were listed as they came in. It is impossible to deal with them unless they are organized under main headings. It is therefore necessary to determine the latter and to arrange them in the order in which they will be taught.

The steps involved here are necessary logical points in the process of curriculum making. From now on the objectives cannot be handled in bulk. They may be used in parts by one person or they may have to be parceled out for further work among several persons. It is essential to have some kind of organization of the objectives.

There are no royal roads to achievement here. The curriculum maker goes over his list again and again until a scheme of organization begins to emerge. First a few headings suggest themselves followed by others in relation to them, and so on. It is essential that they should grow out of the items themselves. It is not always safe to borrow a predetermined or already existing list of main headings

because it may not fit in naturally. Two suggestions are all that can be made. First, the main headings should, as far as possible, be large units of life activity. Second, they should lend themselves to a sequential arrangement for teaching purposes.

There are several possible ways of organizing the main headings in any one field. Take the field of health, for illustration. One may use a structural plan, a functional plan, or a life activity plan. The following table gives several main headings under each plan.

THREE POSSIBLE CLASSIFICATIONS OF HEALTH OBJECTIVES

According to Structure	According to Function	According to Life Activities
Respiratory System	Seeing	Food and Health
Reproductive System	Walking	Clothing and Health
Nervous System	Exercising	Prevention of Common Diseases
Alimentary System	Eating	Home and Health
Circulatory System, etc.	Resting, etc.	The Care of the Sick, etc.

Assignment

Carry out any one of the following exercises:

1. Following is a partial list of objectives of a course in health: (1) determine the main headings, (2) arrange the main headings in teaching order, and (3) place the objectives under their appropriate main headings. The student may work with an original list of objectives from his own field instead of any of those given here.

1. To know how the city purifies its water
2. To know how the community controls communicable diseases
3. To know the effects of laundering on comfort and cleanliness
4. To choose a good soap
5. To use disinfectants and antiseptics
6. To keep and dispose of garbage
7. To prevent flat feet by wearing proper shoes
8. To use proper shades and reflectors for lights
9. To ventilate, heat, and light a sick room
10. To choose stockings for comfort
11. To care for a sty
12. To know what is a proper room temperature
13. To make a bed with a patient in it
14. To consume a sufficient quantity of fruits and vegetables
15. To know how the city disposes of sewage and garbage
16. To care for the hair
17. To prevent indigestion, constipation, and diarrhea
18. To know the functions of the board of health
19. To know the nutritive value of milk
20. To use a clinical thermometer
21. To prevent constriction by clothing
22. To know the dangers of patent medicines
23. To develop habits of regular exercise
24. To make and apply bandages
25. To know what to eat when overweight or underweight
26. To care for an unconscious person
27. To read a thermometer for room temperature
28. To prevent and treat fainting
29. To choose appropriate underclothing
30. To recognize and treat a sprain
31. To know how the city milk supply is protected

32. To know the function of protein in the diet
33. To care for a patient with a communicable disease
34. To recognize and treat shock

2. Following are objectives selected from several sources: (1) read the whole list several times to determine your main headings; (2) classify the objectives under the main headings which you have determined; (3) translate all the objectives into one form (infinitive, noun, verb, or participle); and (4) put an "x" before each objective which is too general.

1. The ability to help care for a school garden
2. The ability to recognize, in some degree, the relation of the natural world to man
3. The ability to understand the primary functions of public institutions such as the postoffice, library, public school, and church
4. The ability to respect the rights and opinions of the minority
5. To secure coöperation between city and country
6. To make and keep a weather chart
7. To appreciate native environment
8. To know how climate affects industries
9. To know something about voting
10. To know how to invite guests
11. To keep the floor clean under a sandbox
12. To greet teacher and children courteously
13. To know the qualities which make up a standard house or apartment
14. To know the chief raw materials of building construction and repair
15. To know the chief household fuels and their relative importance
16. A greater appreciation of mother's work and our dependence upon her

17. A more intelligent interest in family activities
18. A clearer notion of why food is stored for winter
19. Some understanding of what is done in canning
20. A better understanding of what a child ought to eat
21. A greater willingness to eat the simple foods
22. A knowledge of what is to be done in washing dishes
23. Some notion of the extent of our dependence upon the outside world for food
24. To be clean in habits, person, and dress
25. To report symptoms of illness promptly
26. To put away apparatus and material when through with them
27. To keep desk, table, and locker in good order
28. To come to school on time
29. To enjoy a joke, even at one's own expense
30. To be considerate of another's privacy and time
31. To direct but not to boss
32. To be pleasant when someone else is cross
33. To avoid sulking
34. To make a beginning in giving the pupil an understanding of the activities of home, school, and neighborhood, *i.e.*, his social environment
35. To acquaint the pupil with the way other people live and have lived in different environments

3. Following is a partial list of objectives in arithmetic taken at random from GUILER, W. S. — *Objectives and Activities in Arithmetic:* (1) read the whole list several times to determine your main headings; (2) classify the objectives under the main headings which you have determined.

1. Ability to reduce fractions used in business to lowest terms
2. Ability to write the Roman numerals to M

3. Ability to write three- to five-place decimals
4. Ability to subtract two contiguous units of denominate numbers in common use
5. Ability to reduce fractions used in business to common denominators
6. Ability to solve problems involving the common units of weight and measure
7. Ability to subtract fractions with denominators through twelve to sixteen.
8. Ability to count by nines to one hundred, beginning with any number
9. Ability to divide two contiguous units of denominate numbers in common use
10. Ability to subtract fractions used in business
11. Ability to count by twenty-fives to one hundred
12. Ability to reduce decimals used in business to fractional forms
13. Ability to add mixed numbers with fractions used in business
14. Ability to count by twenties to one hundred
15. Ability to multiply two contiguous units of denominate numbers in common use
16. Ability to add fractions with denominators through twelve to sixteen
17. Ability to read seven- to twelve-place numbers
18. Ability to reduce improper fractions that conform to business usage to whole or mixed numbers
19. Ability to add two contiguous units of denominate numbers in common use
20. Ability to subtract mixed numbers with fractions used in business
21. Ability to subtract three- to four-place decimals
22. Ability to add mixed numbers with denominators through twelve to sixteen

23. Ability to reduce the common units of weight and measure from one to two steps
24. Ability to add fractions used in business
25. Ability to sense the meaning of decimals
26. Ability to reduce mixed numbers with denominators through sixteen to improper fractions
27. Ability to reduce the fractional parts of one hundred to decimal forms
28. Ability to reduce improper fractions with denominators through sixteen to whole or mixed numbers
29. Ability to multiply fractions used in business
30. Ability to reduce fractions in the denominators through sixteen to lowest terms
31. Ability to read three- to five-place decimals
32. Ability to multiply fractions with denominators through sixteen
33. Ability to reduce to improper fractions mixed numbers with fractions in business usage
34. Ability to add three- to five-place decimals
35. Ability to reduce improper fractions that conform to business usage to whole or mixed numbers

Questions for Discussion

What method did you employ to determine the main headings?

To what extent is it possible to follow the traditional organization of topics or headings in any field or subject?

What do you do when there is a difference of opinion among the committee on the main headings?

To what degree does the process of classifying objectives affect the teaching of the material?

THIRTIETH MEETING

PLACEMENT OF OBJECTIVES

Eliminate those objectives which do not accord with certain criteria of importance, difficulty, etc.

It will be remembered that the first selection of objectives was made on the basis of certain fundamental principles and on the basis of a thorough analysis of the learner's needs or activities. But it is clear that it is not possible or desirable to achieve all of these objectives by means of formal education. At this point, therefore, we introduce a few final criteria of relative value which it was not possible to take care of earlier in the process of curriculum making. The criteria which any one group of curriculum makers will set up are dependent upon its particular scheme of relative values. Here the criteria below are suggested. Criteria of importance and interest are included because frequently the first selection of objectives does not take these factors into account. A little further on we will suggest a convenient way of carrying out the present step in actual curriculum making.

CRITERIA FOR ELIMINATING OBJECTIVES

1. Is this objective adequately attained outside of school?
2. How important is this objective? (The measure of importance is indicated on a scale from 0 to 10. The least important objectives are eliminated.)
3. How interesting is this objective to the pupil? (The measure of interest is indicated on a scale from 0 to 10. The objectives which appeal least to the interest of the pupils are eliminated.)
4. Is the achievement of this objective within the capacity of the pupil?

Organizing Selected Objectives by Grades and Subjects

(*a*) *Designate the appropriate grade into which each objective falls.*[1]
(*b*) *Designate the appropriate subject or subjects into which each objective falls.*[2]

The list of objectives at this point is complete. It is now necessary to organize the objectives by grades and by subjects. In dealing with the objectives which extend over four or more grades it is wise to make a preliminary placement by school levels, such as kindergarten-primary, intermediate, junior high, and senior high.

The grading and classifying of objectives is necessarily tentative. When carried out by thoughtful teachers of experience it is likely to be a dependable placement of objectives. Later, after the activities have been designed and tried out, it is possible to readjust them to agree with the results of experience. The attempts to grade activities after thorough quantitative investigations of interest or difficulty will be discussed at an appropriate time later. The assumption here is that the objective is sufficiently suggestive of the activity to enable the teacher to indicate the grade or school to which it belongs.

Assignment

The problem of reducing objectives to a final list is discussed in Charters, W. W. — *Curriculum Construction*, Chapter 7. The chapter should be read as a basis for a critical interpretation of the present step. The student is required to suggest, in writing, several criteria for the final selection of objectives.

[1] This step is not necessary when the task is limited to one grade.
[2] This step is not necessary when the task is limited to one subject.

Questions for Discussion

Why is it necessary to eliminate certain objectives determined by the first investigation?

Can you suggest a better way of determining the relative importance and interest of the objectives?

Is it possible for pupils of different ages to be capable of achieving the same objectives? If so, will the teaching material vary?

Why is the present classification and placement of objectives tentative?

Do you agree that experienced teachers are the best judges of preliminary placement of objectives? Why?

Is it necessary to plan the activity before determining in what grade it shall be placed? Why?

THIRTY-FIRST MEETING

PRACTICE IN ELIMINATION AND PLACEMENT OF OBJECTIVES

The last two steps — eliminating certain objectives and organizing objectives by grades or subjects — may be combined, because it is convenient to carry them out at one time, using one blank for both steps.

Assignment

Below is a list of specific objectives ascertained from a study of actual living conditions. It is the purpose of this exercise to eliminate certain objectives and also to organize them by subject and grade.

1. In the first column answer "yes" or "no" to the question: Is this objective adequately attained outside of school?

2. In the second column indicate the relative importance of the objective on a scale from 0 to 10.

3. In the third column indicate the relative interest of this objective to the pupil on a scale from 0 to 10.

4. In the fourth column answer "yes" or "no" to the question: Is the achievement of this objective within the capacity of a pupil?

5. In the fifth column give the appropriate grade into which each objective falls.

6. In the sixth column give the appropriate subject or subjects under which each objective comes. Use the following key:

Ha	Household Arts	A	Arithmetic
Ia	Industrial Arts	S	Science
Ss	Social Studies	H	Health
Sl	Safety Lessons		

		I	II	III	IV	V	VI
SELECTION OF FOOD							
To know the function of protein in the diet	1						
To guard against the over-consumption of meat	2						
To consume a sufficient quantity of fruit	3						
To know the foods rich in protein	4						
CONSUMPTION OF CEREALS							
To know the function of the cereals in the diet	5						
To recognize the forms in which cereals occur	6						
To decrease the cost of the food bill by increasing the amount of cereal in the diet	7						
To increase the consumption of oatmeal	8						
FOOD AND FUEL MEASUREMENT AND CALCULATION							
To read a graduate glass	9						
To read the gas and electric meter	10						

		I	II	III	IV	V	VI
To ascertain the amount saved by a large quantity purchase	11						
To use the ton, cord, and kilowatt hour in fuel calculations	12						
To calculate the dividence of a member of a coöperative store	13						
HOME OWNERSHIP							
To know the relative cost of the chief types of dwellings	14						
To become acquainted with the opportunities of the building and loan associations	15						
To know the details of taxation connected with home ownership	16						
To ascertain the relative advantages of owned and rented homes	17						
VENTILATION							
To know the approved standard of ventilation	18						
To know the relation between dust and open windows	19						
To know that cool surroundings stimulate work	20						
To cultivate the habit of using a thermometer	21						
To use devices to keep the air in circulation	22						
THE PURCHASE OF FURNITURE							
To distinguish birch from mahogany	23						
To identify a veneer	24						
To know the relative durability of the chief furniture woods	25						
To identify the print of quartered oak on cheaper woods	26						
To know the common woods which enter into the furniture of the nation	27						

		I	II	III	IV	V	VI
HOUSEHOLD SKILLS							
To repair a door knob	28						
To repair broken china and glass	29						
To keep a reproducer and motor in good order	30						
To mend rubber articles	31						
HEATING							
To know the most comfortable room temperature	32						
To know how to humidify the air	33						
To know the relative advantages of the several heating systems	34						
To own and use a thermometer	35						
SOCIAL SIGNIFICANCE OF CLOTHING							
To understand the nature of fashions in clothing	36						
To know how fashions affect the wearing quality of clothing	37						
To know the effect of staple fabrics and novelty fabrics on price	38						
To know the effect of ill-fitting or tawdry clothing on one's social relations	39						
LINEN IN CLOTHING							
To know the laundering properties of linen	40						
To know the effect of dyes on linen	41						
To recognize linen that is finished with starch, glue, or gum	42						
To know the hygienic properties of linen	43						

Questions for Discussion

Would you consider the degree of interest of each objective as a factor in elimination?

Is there a better method of determining the relative importance of the objectives?

How will you classify an objective by subjects when there is disagreement?

What are your reactions to the method of carrying out the present steps?

PART V

REVIEW AND CRITIQUE OF OBJECTIVES

THIRTY-SECOND MEETING

A CRITIQUE OF THE PRESENT METHODS OF DETERMINING CURRICULUM OBJECTIVES

Introductory

We have now completed a consideration of the principal methods of determining objectives. Our present problem is limited to a critical evaluation of only one step in the process of curriculum construction, the determination of the objectives of the curriculum. As a matter of fact, this element has received more attention from careful investigators than any other in the process of curriculum construction.

The specific goals of education result from some kind of an analysis of a field of life. Our study has revealed five chief types of analysis, the relative worth of which we wish to review.

The classification of methods of determining objectives is based on those most frequently used at present. Theoretically, a large variety of procedures is possible, depending upon the source of the data, the kind of data, and the method of handling the data. The following table furnishes some raw material for considerable speculation concerning the best method of determining objectives. Indeed, it would be eminently worth while to undertake such a philosophic or experimental study. Combining the first item in each column, we have a *quantitative, direct study of child activities.* Many similar combinations are possible.

THE VARIETY OF POSSIBLE METHODS OF DETERMINING OBJECTIVES

Source	For What Level	What Studied	Method of Study
Direct investigation	Child	Activities (what people do)	Quantitative (exact)
Secondary investigation	Adult	Needs (what people need to do)	
Collection of opinions	Both	Interests (what people like to do)	Informal (rough)
Examination of present practice		Difficulties (errors, deficiencies)	

The Chief Methods of Determining Objectives

The first method of determining objectives analyzes children's activities, interests, or questions. It is most frequently applied in selecting children's literature; also, there have been several studies in the field of elementary science. The interests and activities of children, roughly observed, were the foundation of the score of project or activity curricula which have been published. Whereas this mode of selecting the goals of education should predominate on the elementary level, it does not and cannot exclude certain social needs of child and adult life. The natural activities of children are pursued in a social setting and are inseparable from it. They include the things they like to do; those they need to do; and some that they must do whether

they like them or not. There is no sharp distinction between children's activities and social needs. A study of the project curricula reveals the interesting fact that they include useful adult activities. When an exact study of children's activities is made it involves a systematic recording of their activities or interests. Such studies must be carefully planned to eliminate the artificial situations of the classroom and the suggestive influence of the teacher. When children's reactions or answers are sought they should not have the savor of a school exercise. Since the activities of children depend upon their environment, only portions of the results of studies of activities are generally applicable.

The project curricula which have developed are the informal records of the activities of children. The outcomes of these are not objectives in the sense that we have been using the term, the goals selected in advance. From these outcomes it is possible to select those which are desirable. Project curricula are beginning to conform to a common program. To be really consistent with theory the making of a project curriculum may consist of a variety of types of pupil behavior, familiarity with which should prepare the teacher to pursue the activities which develop from the children's interests.

The second method consists of a direct analysis of the actual needs of life. The analysis sometimes involves the discovery of activities and sometimes the discovery of difficulties and, when a comparison of the two is made, the results emerge in the form of needs. We pointed out that an analysis of social needs is most suitable for the grades beyond the elementary level, that is, beyond the sixth grade. The pupils in the junior high school years and beyond are more closely related to adult life : and so adult needs become more apparent to them. The most fundamental needs must be

met in the education of adolescents. However, when certain units of activity, the importance of which is doubtful, are foreign to the interests of the pupils or too difficult to master, there is no good reason why they should be included. The opinion of intelligent and experienced teachers is the best guide to selection and rejection in this matter.

Job analysis is a special application of the present method to occupational training. An analysis of an occupation like plumbing is made to determine the exact steps in the instructional process. It has been developed by several expert analysts who apply a fairly complex technique. However, it may be applied in simple form to obtain roughly the steps to be followed in training for a specific job like bricklaying. It is usually concerned with training for a highly specialized task in a narrow field. Although a great many job analyses have been made there are comparatively few which have been carried out with extreme thoroughness.

The "case group" analysis emphasizes the importance of adopting instruction to the needs of a particular homogeneous group in a given community. The technique of this method has been developed only in bold outline and has not been extensively applied by curriculum makers. The assumption is that the investigator will make a direct survey of the needs of a particular distinguishable group; that he will discover the deficiencies of the group by a comparison with the good members; and finally, that he will set up a program of training to correct the discovered deficiencies. The method is valuable only in small homogeneous communities which are willing to undertake independent investigations. In our large cosmopolitan cities, it would be impossible to carry out enough investigations to cover all the distinctive groups.

The third method analyzes existing data such as newspapers, magazines, surveys, documents, and books, all of

which describe people's needs. The analysis of newspapers and magazines may be considered a direct analysis only when the investigator's purpose is to help the learner to read the newspaper and the magazine. It happens, however, that most of the studies which applied this method were undertaken to discover objectives of education for all the needs of living. The assumption was that newspapers and magazines mirror life — which is, however, doubtful. If certain cautions are observed, this method may be used to supplement direct analyses. Analysis of social statistics and documents is specially valuable where it is difficult to get at the needs by a direct canvas or survey. There is an abundance of such data available concerning the economic, physical, political, and recreational activities of the people. When not enough data are available, it is necessary to supplement this method by others discussed in this section.

The fourth method collects the opinions of competent persons to determine educational goals. It is not as reliable as a direct study of the learner's needs but may be used as supplementary data when other methods do not furnish an adequate amount. How reliable the method is depends upon the technical ability of the judges. It has the special advantage of enlisting the aid of the teaching corps or of persons in the community.

The fifth method analyzes existing objectives as found in curriculum studies, course of study, and textbooks. This method roughly applied characterizes much of the present effort in curriculum making. In this form, such curricula are not adequate. They lack supporting evidence, they are incomplete, and they lack a unifying purpose or point of view. When certain refinements of technique are introduced, this method is a great advance over an uncritical collection of existing goals. A mere frequency count of

existing objectives is not sufficient. The existing objectives need to be submitted to competent judges for a rating of their relative importance.

Summary and Critique of Studies of Objectives

We now wish to summarize the available studies made thus far to determine educational objectives. The summary should indicate what has been achieved and what still needs to be done. Furthermore, several criteria should emerge. The table on page 133 gives the bare facts from which one may draw at a glance some obvious conclusions.

1. There are more studies which make a direct analysis of the needs of the learner than any other method. This is encouraging because the method has a high degree of validity.

2. Quantitative analysis of children's activities ranks second. This, too, is encouraging because of the similarity of its technique to the method referred to in the preceding paragraph. It should be remembered that it was proposed that this method be applied to the elementary grades.

3. While only a relatively small number of studies have been considered here which are based on opinion and analyses of existing objectives, there are actually a large number of informal studies of this type which did not deserve to be included. These methods have relatively little reliability and, therefore, it is not disappointing that there are only a small number of their applications available.

4. The project curricula really represent extensive observation and a wide range of subjects. Each project curriculum involves the coöperation of several teachers or investigators and covers a long period of study.

5. Language, social studies, science, and mathematics seem to be more extensively explored than any other field. The explanation is offered that these are fields in which the

Summary of Studies of Objectives by Method and School Subject

Subject	Direct Analysis of Activities		Direct Analysis of Needs			Secondary Analysis of Needs		Analysis of Opinion	Analysis of Existing Objectives	Total
	Quantitative	Informal	Life Needs	Case Group	Occupation	Newspapers	Statistics			
Fine Arts	2									2
Handwriting			1							1
Health and Recreation	2		4			1	3	1		11
Language	18		16				1	3	2	40
Mathematics			14			2	3	5	6	30
Music										
Practical Arts	1		9	1				2	2	15
Science	7	1	1			5		9	10	33
Social Studies	1	1	2	2		8	9	7	2	32
Vocational Studies					31					31
Several Subjects		21							3	24
Total	31	23	47	3	31	16	16	27	25	219

material is tangible or in which there has been much stimulating leadership.

6. There are several unexplored fields waiting for pioneers. The lack of investigation here may be due to the absence of leadership, the lack of a technique, the lack of stimulation of professional organizations, and the intangibility of the basic evidence.

7. In certain fields there seem to have developed certain special techniques which have attracted investigators. In reading there is an abundance of studies of children's tastes. In mathematics and language there are eleven surveys of the needs of the learner. In vocational education there are a large number of job analyses. In science there has been some experimentation with four methods. Here we ought to have some promise of the appearance of an approved technique or of a telescoping of methods.

8. In all, we have considered over two hundred investigations worthy to be included in our summary. What have we to show? In quantity, there is undoubtedly an abundance of studies, an ample achievement. However, when we come to consider the quality of those studies we are forced to admit that we are in the primitive stage of the science of curriculum making. There are several outstanding studies but, on the whole, we are not ready to say that a valid technique has emerged. The greatest danger to the curriculum-making movement would be an attitude of complacency concerning our present achievements.

9. Finally, we cannot escape asking ourselves "Does a single method or technique emerge which we are ready to recommend for general adoption?" We are obliged to answer in the negative.

It has already been indicated that some methods are, for the present, most appropriate under certain circumstances, but any careful observer would have to admit that

the curriculum-reconstruction movement is too young, too undeveloped to make it possible at this time to put the stamp of finality on any procedure. We do not hesitate to hazard a ranking of the methods, but this ranking is purely personal and tentative. We would rank the method of direct analysis of the learner's needs first for curricula above the elementary school level; the method of quantitative analysis of children's activities first for curricula on the elementary level; the method of job analysis first for vocational curricula. We would subject the outcomes of the project curricula to a rigorous process of selection and, with this reservation, would rank this procedure second for curricula on the elementary level. The method of analysis of social statistics; the method of analysis of competent opinion; the method of analysis of newspapers and magazines; the method of analysis of existing objectives we would rank successively third, fourth, fifth, and sixth. It is impossible to rank the method of "case group" analysis because it may involve direct evidence, secondary data, or subjective data, any particular study having a validity in accordance with its data.

Assignment

On a large sheet of cross section paper, about 18″ × 15″, make the tabulation as indicated in the following chart. This exercise calls for a comparison of the five proposed methods on six points. The first column requires the student to give an illustration of the method under consideration. The second column is for a statement of its advantages. The third column is in two sections: in the first section, the limitations of the method as applied thus far are given; in the second section, the limitations of the method when properly applied are given. In the fourth column, the student tells when each method is particularly

Tabular Review of Methods of Determining Objectives

Method		Illustration	Advantages	Limitations		When is it appropriate?	What cautions should be exercised in using the method?	Comparative reliability		
				As applied thus far	When properly applied			For elementary curricula	For secondary curricula	For vocational curricula
Direct analysis of activities	Quantitative									
	Informal									
Direct analysis of needs	Life needs									
	Case group									
	Occupation									
Secondary analysis of needs	Newspapers									
	Statistics									
Analysis of opinion										
Analysis of existing objectives										

appropriate. In the fifth column, the cautions which should be exercised in the use of the method are recorded. The sixth column calls for a ranking of the several methods in three subdivisions; for elementary, secondary (junior and senior high school), and vocational curricula.

This exercise should have two results. First, it should serve as a review of the methods of determining objectives and second, it should prepare one to arrive at certain criteria of a good method, which is the problem which next confronts us. The student may compare the methods as applied to any subject or he may make a comparison of the several methods keeping in mind their relative qualities as they apply to a special subject like mathematics.

THIRTY-THIRD MEETING

THE CRITERIA OF A GOOD METHOD OF DETERMINING OBJECTIVES

At the close of the last meeting, we indicated that from the comparison and criticism of the chief methods of determining objectives, there should emerge a set of criteria of good method. Such criteria will presently be suggested. The criteria for any particular group depend upon its own system of values. Furthermore, no two criteria are necessarily of equal importance in deciding on a method. The foregoing comparison and criticism of the chief methods of determining objectives yielded several tentative criteria which are given without comment.

SOME CRITERIA

1. The study should yield objectives which point to an improvement over present habits of living.

2. It should analyze the actual adult and child needs. (Applicable only to secondary level)
3. It should rely on secondary data of life needs only when direct analysis is too difficult or too costly.
4. It should rely on newspapers and opinions as a source of supplementary data only when other data are not available.
5. It should analyze the activities or interests of children. (Applicable only to elementary level)
6. It should be objective; that is, the influence of opinion should be reduced to a minimum, or, as far as possible, the method should be impersonal.
7. As far as possible, it should analyze a given group in a limited locality having common needs.
8. If the study analyzes social needs and not child activities, it should take account of the pupils' interest in the final selection of objectives.
9. It should be a comprehensive analysis of all the needs in any major life activity or school subject.

The following criteria were prepared by Mr. L. H. Neulen for a committee in a course at Teachers College conducted by Dr. Hillegas and Mr. Craig. They are presented as a sample of an original determination of criteria. Assuming that the author of these criteria will eventually make a course of study in physics, he will have to make a systematic selection of objectives. He may evolve an original plan which should conform to his criteria or he may use any of the existing plans which most nearly conform to them.

CRITERIA FOR THE SELECTION OF SUBJECT MATTER (PHYSICS)

1. Choose subject matter which is interesting to the child and which will make him *desire* to enlarge his knowledge of science. (Law of Readiness)

2. Select subject matter with reference to the pupil's present abilities and capacities. (Law of Individual Differences)
3. Select activities which can be tied up with the past experiences of the pupils. Otherwise they may prove to be a source of annoyance. (Law of Effect) New activities should also have common elements of past experiences. (Law of Analogy)
4. All activities should provide a valuable learning experience for each child — making desirable new bonds and strengthening old ones. (Law of Exercise)
5. Choose activities and subject matter adapted to the growth needs of each individual child, taking cognizance of "what he is in reference to what he may become." (Law of Associative Shifting)
6. Activities should vary with maturity, original nature, previous training, and environment. (Law of Multiple Response and Varied Reaction)
7. Select subject matter and activities which lend themselves to the encouragement of much pupil activity in all demonstrations and experiments. (Law of Readiness and Effect)
8. Select some subject matter that will give information which is interesting purely for its own sake. (Based on the dominant and potent interest of Mental Activity)
9. Activities should be selected which will likely be carried on by the children in adulthood. (Based on the philosophy that you prepare a child not only for the present society but also for the society in which he is likely to live)
10. Subject matter and problems should look wholly to the desirable current activities of the men and women of the city or community. Nothing should be utilized which cannot justify its existence in terms of actual human action and experience. (Intrinsic Worth)

11. Select subject matter which will correct common superstitions and ignorant practices.
12. Select subject matter that will give children information about those appliances and features which science has developed and which are useful in making for greater comfort and convenience in the home and the community.
13. Select worth while subject matter, the solution of which will meet a balanced adjustment between references and textbooks.
14. Select subject matter requiring inexpensive and simple equipment for its presentation and experimentation.
15. Merely because a thing is true is no reason in itself for teaching it.
16. Teachers should ask the following questions as completely and definitely as practicable.
    a. What science thinking should be done by the men and women of my city or community?
    b. What activities do they, or should they, perform which require physics for proper guidance?

PROVISION FOR PROGRESS

The criteria presented here have been generally discussed and recognized by students and workers in curriculum making. They have been considered incidentally in connection with the presentation of the several methods and in discussing the practical applications of these methods. There is one criterion, thus far generally neglected, which is sufficiently important to receive special attention: *Has the technique yielded objectives which result in an improvement of present living?* Comparatively few curriculum studies have taken this factor into account.

It would be absurd to determine the objectives of correct speech by an analysis of the habits of speech of the mass of

people. We have developed rules of grammar and, to a certain degree, standards of style. While it may not be necessary to teach all the rules of grammar and all the canons of style, it is necessary in some manner to improve over the present deficiencies in speech.

The greatest part of our educational endeavors begins and ends in the present order of living. Activity which is not questioned, knowledge which is not controversial, practices which are indisputable are accepted. The sanctions of tradition and organized authority are the criteria of school occupations. Economic, social, physical, and recreational material which falls on the borderline between the accepted and the unaccepted is excluded. The great body of educational material which has not established itself in the current body of theory is regarded with suspicion.

A curriculum investigation should be concerned with what ought to be done and not merely with what is now done. Only in this way can we overcome the criticism that present curriculum making does not look toward the future, that it does not make for progress. A real criticism of present education is that it does very little to create changes, but rather follows in the wake of social improvement.

Several curriculum investigators have recognized the importance of the factor of social progress in the determination of objectives. Dr. Harold Rugg had this clearly in mind when he undertook to analyze the writings of frontier or advanced thinkers to discover problems in the social studies. Dr. David Snedden's analysis of a case group provides for the discovery and attainment of the standard of the better members of the group. In order to correct the deficiencies in letter writing, R. I. Johnson compared the characteristics of 1,000 letters of college freshmen with those of 496 letters of recognized merit. The author's study of the objectives for effective consumption of economic goods

compares actual modes of living with approved standards of living.

There are some fields of investigation in which standards of approved practice are either not ascertainable or very difficult to determine. For example, when Ernest Horn determined the 3,009 most common words used in adult writing, there was no way of discovering whether they were the best words which adults ought to use. On the other hand, there are some fields of investigation in which the standards of right practice are easily ascertainable. For instance, in order to determine how the common grammatical deficiencies in speech may be corrected, it is simply necessary to compare the locutions of any particular group with correct grammatical rules.

Since few studies take improvement over present practice into account, it will be necessary to give this matter special study. What the specific technique of assuring improvement over the *status quo* of any particular study should be, it is difficult to say. However, the curriculum maker cannot escape asking himself, "Do my objectives result in better ways of carrying on the life activities under consideration?"

SELECTING A METHOD OF DETERMINING OBJECTIVES WITH EXACTNESS

For ordinary purposes one may select a method of determining objectives roughly with several criteria in mind. For one who wishes to carry this process to a greater degree of refinement, a more exact procedure is possible which is suggested here, without detailed description however. First, the group draws up a list of criteria in accordance with its principles of education. Second, it gives to each criterion a numerical measure of importance. Third, it scores each method on all the criteria. Fourth, it gives each method a

total score on all the criteria. The method which scores highest is selected for the group.

For the purpose of illustration, let us assume that we wish to make a course of study in health for senior high school girls who will most likely enter a group of selected occupations or go to college. It is not possible to examine the girls to discover their physical defects which will make it necessary to gather any available data on physical defects of adolescent girls who resemble our group. These data will be inadequate and therefore it will be necessary to ask the opinion of the pupils and adults as to what their greatest health needs are. What method of curriculum making shall we select? We already are convinced from the nature of the available data that we shall be obliged to use a combination of methods. But, assuming that we had the facilities to carry on any investigation, which method would we select?

We have determined our criteria and have written them in the first column on the left. In the next column, we have assigned a value to each criterion. We then proceed to score each method, always keeping in mind our problem, our facilities, our available data. We omit rating several methods because they are not applicable to our problem at all. Our score indicates that for our purposes it would be most desirable to make, first, a direct analysis of the habits or activities of the pupils, and, second, an analysis of health statistics which describe these habits. The first procedure is impossible and the second is only partially possible. Since an analysis of newspapers would likely duplicate our health statistics, we shall have to rely on opinion to supplement our secondary data on health habits. The following table gives the scores which we have used here for our hypothetical illustration.

Scoring Methods of Determining Objectives in Health Education

Criteria	Maximum score on each criterion	Method of determining objectives								
		Analysis of children's activities	Project curricula	Analysis of life needs	Case group analysis	Job analysis	Newspapers and magazines	Social statistics	Opinion	Analysis of existing objectives
1. The study should yield objectives which point to an improvement over present habits of living.	3			2				2	2	
2. It should analyze the actual and adult needs (applicable only on secondary level).	4									
3. It should rely on secondary data of life needs only when direct analysis is too difficult or too costly.	3			2				2		
4. It should rely on newspapers, etc., only when other data are not available or as a source of supplementary data.	2						2			

5. It should analyze the interests or activities of children (applicable only on the elementary level).	4									
6. It should be objective, eliminating the influence of opinion as far as possible. The results should be susceptible of proof by other investigators.	4			2			2	2		3
7. As far as possible, it should analyze a given group having common needs and living in a limited locality.	2			2			1	2	1	
8. The final selection of objectives should take account of the pupils' interest.	2			1			1	1	1	1
9. It should be a comprehensive analysis of all the needs in any major life activity or school subject.	2			2			1	1	1	1
TOTAL				11			7	10	5	5

Assignment

1. Reread your tabulation of the methods of determining objectives, especially the column giving their advantages and limitations. In addition, read any material you can obtain on criteria of selecting objectives. State briefly an actual or hypothetical curriculum problem. Draw up a list of criteria in accordance with your own principles of education. Then describe in a sentence or two the best method or methods of determining objectives for the field you selected.

2. There are several studies which determine objectives for *improved* living. Read any of the studies which follow on pages 146-247 and describe briefly how the investigator goes about it.

Questions for Discussion

Which of the proposed methods of determining objectives would Mr. Neulen be inclined to favor? Why?

How do you account for the existence of so few studies which propose objectives for an improved order?

How do certain investigators determine what people ought to do as opposed to what they are now doing?

Readings

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Harap, H. — *The Education of the Consumer*, pp. 4–13, Macmillan, 1924.

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RUGG, H. O. — "Problems of Contemporary Life as the Basis for Curriculum Making in the Social Studies"; *The Twenty-second Yearbook of the National Society for the Study of Education*, Pt. II, pp. 260–273.

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PART VI

DETERMINING THE NATURE OF A TEACHING UNIT

THIRTY-FOURTH MEETING

DETERMINING THE NATURE OF A SCHOOL ACTIVITY

At this point we have completely determined our final list of objectives in an organized form. Logically, we have completed the first half of the task of curriculum making. The remaining half of the task has to do with determining what experiences we shall plan in order to enable the pupils to achieve the objectives which we have discovered.

Determine exactly what you mean by a school activity.

It was pointed out previously that there is much confusion in the minds of the readers of the literature of curriculum making concerning the terms *objective* and *activity*. An objective is a specific goal, useful in life, to be achieved by education. It is a specific, usable skill, knowledge, or attitude which should be developed as the result of formal training. It is what the pupil should be able *to do*, *to know*, or *to be* as a result of a given amount of learning. It is the usable achievement which should result from any one unit of school work.

An activity is a school experience in which the pupil engages in order to attain a skill or knowledge or attitude. In informal discussion, we frequently use a variety of terms, such as activity unit, teaching unit, teaching procedure, unit of work, teaching material, and unit of instruction. These terms denote the same general idea — the school experience designed to achieve any given educational objective. Any one unit of school activity may include a variety of experience, such as observing, discussing, reading, listening,

studying, planning, reasoning, touching, moving, manipulating, experimenting, constructing, singing, drawing, playing, and so on.

The modern public school was religious in origin. It may be traced back to the Reformation, the leaders of which urged the establishment of free, universal, tax-supported schools in which the mass of people might learn to read the Bible. The development of science in the seventeenth century led certain school men like Comenius to emphasize the study of the things about us. But very little progress was made until the nineteenth century when the states began to take over the schools. They readily accepted the principles of Rousseau and Pestalozzi who renewed the cry for first-hand experiences in education. Their ideas reached America but were formalized into nature study, manual training, and laboratory courses. The original principles were ignored until recently when, under the influence of John Dewey and others, American education became identified with life and the curriculum came to be viewed as a program of experiences.

At the same time the researches into the nature of the child reinforced these views. It was discovered that learning goes on most effectively when the child has satisfying experiences. Habits, if they are to influence conduct, need to be formed as nearly as possible in the way that they are to be used in life. The natural behavior of children involves the expression of all the senses, manipulation, construction, bodily activity, play, and companionship.

The old curriculum did not require one to define activities because one was content to outline the subject matter or content and trust that the teacher would plan an appropriate activity. The new curriculum places emphasis on the particular kind of school experience in which the pupil is to engage. In the past, the planning of the pupils' experiences

has always been the problem of method. We were in the habit of thinking of purely intellectual performances and, therefore, it was possible to develop several general methods or ways of imparting information. Today we no longer undertake to prescribe general methods. We center our attention upon activities or experiences. In the pursuit of any one school experience or activity, it is impossible to predict exactly what we wish the child to do. For each unit of school activity we plan a special method, as it were, which is inseparable from the materials, facts, feelings, and bodily movements involved.

From the point of view of modern curriculum making we are as much interested in how a habit is formed as we are in the mastery of it. We are not satisfied, merely, to indicate the facts to be learned or the skills to be developed. We are very much concerned about the kind of experience the child will have in learning the facts or developing the skills. For example, suppose we considered it desirable to learn to identify a sparrow and to discover its economic service or harm. First, the teacher might talk to the pupils about it and follow it by a recitation. Second, the teacher might assign a chapter in a textbook and hear the lesson. Third, the teacher might distribute pictures of the sparrow and its habits and follow with a discussion. Fourth, the same procedure might be carried out with a stereoscope. Fifth, the material might be presented by motion pictures followed by questions. Sixth, the lesson might be conducted by the use of stuffed sparrows and models. Seventh, the children might be taken out into the open to observe the habits of a real sparrow, make their inferences, and compare them. These seven different experiences or certain combinations of them cannot be of equal value. It is the business of the curriculum maker to discover the most effective experience that children should have in learning the economic value of

a sparrow and to incorporate it as his best suggestion to the teacher.

In the printed course of study, the description of the activity makes up the bulk of any one unit of instruction. The objective may be one or several sentences giving the purpose of the unit, but the description of the class activity tells what the teacher does, what the pupils do, what materials are used, how these materials are used, what direction the discussion takes, and so on.

Sometimes it is a graphic account of the activities, responses, questions, and remarks of the children. The essential point is that a course of study shall present an activity as a description of things *to be done* and not as an outline of information *to be learned.* We wish to discover the best experience the child should have and to describe it in such a way as to enable an average teacher to reproduce it.

This conception of school activity does not exclude the existing formal materials of instruction. It regards them as one of several elements that enter into the pupils' experiences in the school.

Some activities may be carried on in their normal settings outside of the school, such as a study of a house in the course of construction. Some activities may be carried on in school in which the natural conditions of life are introduced, such as painting one's wagon. Some activities may be carried on in school which introduce actual situations artificially, such as wiring an electric lamp. Some activities may consist chiefly of observing and recording, such as distinguishing real silk from artificial silk. Some activities may be entirely mental but utilizing actual printed materials, such as calculating a fair rental from documents giving the assessed values of land and buildings.

Practically no work has been done on the technique of

planning activities for publication in curricula. The nature of activity is discussed briefly by writers on the curriculum and by the authors of several project curricula. But in no one treatise can we find a complete discussion of the nature of school activity. Here, then, is a virgin field for the curriculum specialist. For the present it is only possible to analyze superficially the present desultory achievements and to suggest how they may be organized into a practical technique.

Assignment

The student should read one of the following discussions on the nature of activity. As a result of his reading, the student should write a brief paragraph setting forth his own conception of the nature of activity. The class discussion will be based on the questions which follow.

Questions for Discussion

What is the difference between the terms *objective* and *activity?*

How do you account for the slow development of the present conception of school activity?

In what respect do the needs of life demand that the curriculum shall consist of activities?

Does our conception of activity conform to the behavior of the learner?

In the printed course of study what is the activity likely to be?

Readings

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Charters, W. W. — *Curriculum Construction*, Ch. 8, 9, Macmillan, 1923. Read selectively.

DEWEY, J. — *The Child and the Curriculum*, University of Chicago Press, 1902.
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MOSSMAN, L. C. — "The Place of Activities in the Work of the Intermediate Grades"; *Wisconsin Journal of Education*, September, 1926.
WELLS, M. E. — *A Project Curriculum*, Sections 2 and 3, Lippincott, 1921.

THIRTY-FIFTH MEETING

AN EXAMINATION OF CURRICULA CONTAINING ACTIVITIES

Thus far we have attempted to arrive at a clear understanding of the nature of a school activity. We proposed this definition tentatively: a unified experience which the pupil has in the attainment of any one specific purpose.

The general term *activity*, if used in connection with the printed course of study, is likely to lead to confusion. Therefore, we shall use the term *teaching unit* from now on. The bulk of any teaching unit obviously consists of the experiences which the children will most likely have. Consequently, the bulk of the printed teaching unit will consist of a description of the school activities. In addition, the

teaching unit usually includes a statement of the purpose of the activity, a list of the materials and books used in connection with the activity, and sometimes other elements such as the assignment, questions for discussion, and so on.

This leads us to a consideration of certain actual courses of study in which we will find teaching units which contain descriptions of activities. The student will observe, in examining these courses of study, that they depart from the traditional printed courses of study in that they are not outlines of knowledge. Furthermore, he will find other characteristics which are suggested by the questions below.

Assignment

Read several of the references, on pages 157–161, in your particular field and answer the following questions in writing:

What do you like about these courses of study?

What is wrong with these courses of study?

To what degree do the activities which are described reproduce actual life activities?

What different kinds of experiences are involved in some of the teaching units?

To what degree are the pupils active?

To what degree do all of the senses enter into some of the teaching units?

To what degree are actual materials used in the teaching units?

Readings

fine arts

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Spokane, Washington, Public Schools — *Course of Study, Art Department*, 1923.

HEALTH

North Dakota State Department of Public Instruction — *Course of Study in Physiology and Hygiene*, 1922.

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Long Beach City, California, Schools — *Course of Study, First Grade Language*, 1924.

Oakland, California, Public Schools — *Language and Grammar for Grades I to IV*, 1921.

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St. Cloud, Minnesota, Board of Education — *Reading in the St. Cloud Public Schools, Grades I to VI*, 1924.

MATHEMATICS

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Richmond, Virginia, 1921.
Passaic, New Jersey, 1923.
State Course, Helena, Montana, 1920.
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INDIANA DEPARTMENT OF PUBLIC INSTRUCTION — *Manual with Course of Study in Arithmetic for the Elementary Schools of Indiana*, 1924.

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PRACTICAL ARTS

FRIESE, J. J. AND OTHERS — *Manual Arts in the Junior High School, St. Cloud Public Schools.* A detailed outline of the course in terms of activities.

WINSLOW, L. L. — *Art and Industrial Arts*, University of the State of New York Bulletin, No. 761, July 1, 1922.

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DETROIT PUBLIC SCHOOLS — *Course in Nature Study*, 1922.

Francis W. Parker School — *The Course in Science: Yearbook*, Vol. V, 1918.

Patterson, A. J. — *The Study of Nature for Grades I to VI.*

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Volume VIII — *Creative Effort*, 1925.

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THIRTY-SIXTH MEETING

A CRITICAL EXAMINATION OF SOME TEACHING UNITS

The last meeting was devoted to a general inspection of courses of study which embody the newer conceptions of school activity. We do not wish to imply that other schools are not introducing activities in place of traditional recitations. The makers of the courses of study which we have

considered have taken the special pains to describe the activities which should be carried on in the school in the printed courses of study.

Examine critically some previously prepared teaching units and determine certain general qualities of a good teaching unit.

At the present time it is impossible to say exactly what form the teaching unit should take in the printed course of study. Very few deliberate attempts have been made to determine the most effective presentation. Those who have undertaken to describe activities in printed curricula have relied upon purely individual modes of exposition. They have tried to describe clearly a classroom procedure. The available teaching units are not the product of trained writers. The accounts have been composed by those who have had activities to propose and by school officers assigned to do so. Consequently, the examples which follow are included because they appear to represent the literary form suitable for the description of teaching units.

Ultimately, it may be possible to determine more accurately the most serviceable form of the teaching unit. It will be necessary to submit the same unit, in several forms of approximately the same quality, to a number of average teachers asking them to choose among them. More specifically, they should tell which is clearest; which looks the best; which is easiest to read; which is most convenient to use immediately; and which is most convenient for permanent use.

The term unit has an elastic connotation. It may include work for one period, for several periods, or for several weeks. Assuming that the objectives for the longer units do not become too indefinite, there is no essential difference between the preparation of short and long units. The illustrations here will be short units because there is greater assurance

of definite accomplishment if we know the goal for a relatively short work period. Moreover, the reader must not conclude that all teaching units can be compressed into brief statements because the illustrations in this section are brief. The curriculum maker should not be cramped by the limitations of space. Because curricula in the past have been carved to the bone is no excuse. The unit should take as much space as is necessary to make it clear and graphic.

There is one element, which is present in every teaching unit, namely, a description of school experiences or activities, an account of what is done by the class including the teacher. Most teaching units also include the objective or the specific purpose. Only rarely is the outcome, goal, objective, or purpose omitted in a good teaching unit. In our opinion, the objective and the activity are the two indispensable elements of a teaching unit. Beyond these there may be some difference of opinion as to the value of including assignments, references, essential facts, and so on.

The purpose, here, is to discover inductively the qualities of a good teaching unit. We will analyze a number of selected teaching units. We have included several subjects, forms of exposition, and schemes of organization.

A Teaching Unit in Science for the Fifth Grade [1]

Objective:

To know how a building is heated and ventilated.

Procedure:

The teacher makes arrangements with the janitor to visit the boiler room in the school with her children. She explains to him beforehand in what phase of his work the children are interested and what he is to explain to them:

[1] By L. H. Wagenhorst.

what he must do to draw up the fire in the morning; how much coal it takes on a cold day as compared with a warm day; how he knows when the building is warm enough to be comfortable; how the heating system works; how the building is ventilated.

Compare the weight of a bucket of coal with a bucket of ashes. Give the children some idea of how much coal he ordinarily has to shovel into the furnace on a cold day and how much ash is left, etc.

After this visit has been made and the underlying principles explained, the children should be asked to learn from their parents how their house is heated, and later to get permission to accompany mother or father every time during one day he or she goes to tend the furnace. They should be told to be careful to look at the thermometer from time to time during the day to see what happens when the draft is on and when it is off.

After the children have had these experiences at the school and the home, an opportunity should be provided for further discussion in the classroom so that they may exchange experiences.

A Teaching Unit in Elementary Science

I. Objectives:

To observe the beauty of the sky in the daytime.

To recognize the sun as the source of light and heat.

II. Class Activities:

Discuss the term horizon and its meaning. Let the children observe the color of the sky. Recall what we can see in the sky; the sun, clouds, the rainbow. Recall the location of the sun in the morning, at noon, in the evening. Show with the arm how the sun appears to travel across the sky. Teach that the sun is the source of light and heat.

[1] Cleveland Public Schools — *Course of Study in Elementary Science*, 1926.

Observe the temperature. Observe the clouds; their motion; discuss the cause of their motion. Observe the ever-changing shapes of clouds; the beautiful colors in the clouds at the rising and setting of the sun; the rainbow with its colors. If possible, let the sun shine through a crystal to make a rainbow in the schoolroom. Place thermometer in the sun for 20 minutes; read and record. Place in shade; read and record.

III. Visual Material:

A crystal to produce a rainbow. Thermometer.

IV. References:

Teacher's. *Handbook of Nature Study* — Comstock.
Children's. *Sunshine Stories* — Anderson.

A Teaching Unit in Mathematics [1]

Objective

To count up a score at the end of a game.

Mathematics Involved

Additional practice in counting by 2's, 5's, and 10's beginning at "0." Introduction to counting by 3's beginning at "0," and by 2's beginning with 1.

Procedure

When playing games where a certain number is given for each successful throw, the children continue to count up scores by 1's, 2's, 5's, and 10's in which they have had considerable practice. They play a game in which each successful throw counts three. Count up score by 3's, first, by use of counters, then, by marks on the board, and later, by figures.

[1] Adapted with slight modifications from Columbus, Ohio, Public Schools — *Course of Study in Primary Arithmetic for Grades I, II, and III*, 1923, pp. 32–33.

When some game is played in which one mark is given for each successful throw, let the teacher keep score, putting the first mark by itself and the rest in groups of two. The children may then count by 2's, beginning with one — as one, three, five, etc. After the children see the meaning of these different ways of counting, let them practice almost daily until it becomes automatic.

A Teaching Unit in Art [1]

Border Designs for Garments

The pupils are making smocks or blouses in their sewing classes. Lead them to plan simple borders on the collar and sleeves, etc. Plan on paper several, straight-line borders in a very simple way, gradually increasing the difficulty by increasing the number and arrangement of lines. That is, plan a line border suitable for stitching, showing simple repetition, alteration and changes in size, alteration and change in grouping, change in size and tone, change in shape, tone, and size, etc. Plan a variety of edges suitable for stitching based upon the principles of design.

A small sampler for reference use makes a very interesting problem. First, sketch a plan stressing arrangement of lines, spaces, color combinations, and stitches. Study color harmonies through flowers and plants. Apply borders to the material for which it was designed.

Materials

Towels, handkerchiefs, blouses, cuffs, collar, etc.; paper 9 × 12, pencil, lettering pen; linen, needles, embroidery, floss.

References

Brown, H. H. — *Applied Drawing*, pp. 30–32.
Fales — *Dressmaking*, pp. 451–485.

[1] Detroit Public Schools — *Course of Study in Art Education, Intermediate Schools*, 1923, p. 24. The original was printed in parallel columns.

Standards of Attainment

Ability to use repetition, balance, and rhythm in making borders for stitching
Ability to produce neat and careful work
Ability to feel color harmonies

A Unit in Social Studies for High Schools[1]

Specific Objective

To realize the importance of changing conditions of rural life.

Suggested Activities

Compare farm life in colonial times with that of today. List the present qualifications for farming. List the numerous, mechanical inventions which have improved agricultural production. Find out how the Department of Agriculture has aided the farmer. Investigate the condition of tenancy upon our farms. Collect statistics in regard to tenancy. Discuss how large scale production has changed agriculture.

Suggested Procedure

Direct attention to the causes which have revolutionized rural life. Illustrate the changing conditions in regard to free land. Discuss the development of the tenant problem and the present attitude toward tenant relief. Point out opportunities for advancement in agriculture in 1870 and 1920.

Desirable Outcomes

Knowledge of the changes in rural conditions
Appreciation of the effect of the mechanical revolution upon rural conditions

[1] St. Louis, Missouri, Public Schools — *Sociology for the High School*, 1926. The original was printed in parallel columns. Slightly modified.

A Unit in Language for the Eighth Grade [1]

Specific Objective

To gain skill in stating in a single sentence the basic idea of a particular unit of reading material.

Suggested Procedure

Have each pupil state in a single sentence the underlying idea of a book he has read in his leisure time. If the book is a narrative, the pupil should give enough incidents from the story to prove his statement of the underlying idea. If it is of the informational type, the pupil should prove his statement by giving supporting details from the book.

Suggest the following procedure for discovering the central idea of a chapter: (1) State in a sentence the central idea of a chapter of a book on social studies. (2) List details from the chapter to prove the statement. (3) Check with the class on the statement of the main idea. (4) Determine the best possible statement.

Such selections, as Phillips' lectures, or Addison's paper from *The Spectator*, or a group of paragraphs from a well-written text, will provide usable material for the study of the topic sentence.

Suggest the following procedure: (1) Read a paragraph and state the topic sentence. (2) Proceed in this way through the selection; frequently the topic sentence is stated in the paragraph; if there is no topic sentence given, write one summarizing the ideas of the paragraph. (3) Check on topic sentences in class discussion.

Desirable Outcomes

Ability to state and verify statement of the central idea of a book

[1] St. Louis, Missouri, Public Schools — *English for Grades VII, VIII, and IX*, 1926. The original was printed in parallel columns. Slightly modified.

Appreciation of the value of determining the underlying idea of a book

Ability to state and verify statement of the central idea of a chapter

Appreciation of the value of recognizing the central idea of a chapter

Ability to determine the topic sentence of each paragraph

Appreciation of the value of the topic sentence

A Teaching Unit in Health[1]

Foot-Hygiene in Second Grade

The children were able to figure out the type of shoe best for them chiefly by sharing experiences. Some had already suffered from corns because the toes had been crowded. Others had suffered from blisters and callouses because their shoes had been too large. They knew their feet were growing and that the shoes should be sufficiently long.

They were able to find out the best makes available by inquiring at the shoe stores and by looking over advertisements. Incidentally they found that good shoes are expensive. In order to help them understand why that should be, the teacher gave information regarding the history of the shoe making industry in such a way that the many operations in making a shoe were evident.

Since a good pair of shoes is expensive, it is well worth taking care of. That, they figured, could be done in several ways. There was a certain care that could be given the shoes by standing and walking correctly. Rubbers should be worn in rainy weather. If the shoes are damp or wet, they should be dried out slowly. They should be mended before they are too badly worn. Lastly,

[1] Iowa State Teachers College — *Particular Phases of Instruction and Demonstration*, Bulletin, Vol. XIII, No. 4, November, 1922, pp. 48–51. Abridged.

the shoes should be kept looking well, and so they determine to make shoe polishers. When these were finished some of the children were too proud of them to use them, while others wanted to polish the shoes of everyone entering the room.

By means of the "Posture and Foot-Charts" which are published by the Woman's Press in New York City at a nominal price of twenty-five cents, the children acquired a definite idea as to what a perfect foot looks like. At home, they applied the tests suggested to their own feet and either brought in the result or reported it at school. A baby's foot is perfect in that the great toe is on a line with the heel. Many of the parents will remember how their children put one foot on a piece of paper and drew around it, and then applied the ruler to see if the toe was in correct line. Most of the children's feet were perfect in this respect. The great toe had not been thrown out of line by pointed-toed shoes. Next they applied the test for flat-footedness which they took by putting the foot in water and stepping on the floor. If the entire impression was left they knew they were flat-footed. One of our boys was quite disgusted when he found his feet were not in the best condition in this respect, but his attitude changed when he found from the charts that by "toeing" straight ahead he could strengthen his arch. Causes of bunions and how to bathe the feet were discussed.

The children decided to make an exhibit on one of our big bulletin boards. They made several posters showing shoes that were good in general shape. They made one showing a different test for the arch, which test they had found in an advertisement. This test was taken by slipping the blade of a case knife under the arch from the inner side of the foot and if there was space left for the handle they knew the foot was well formed. The children dictated compositions and put them on the bulletin board along with their posters.

A Teaching Unit in Geography [1]

Taking a Trip to Newmark's

When studying South America one class wrote to Newmark's asking permission to visit the factory. . . . At the factory, three men accompanied the class and explained everything. The children saw how the coffee was shipped from South America, how it was roasted, blended, and packed. They also saw how the spices were received and through what preparation they had to go before they were ready to sell. The vanilla bean was shown and its cost was told, and they learned how the beans were packed in bales and shipped to the factory; also they found out how many gallons of vanilla extract one bale made. Then they saw how cream of tartar was made. This and the making of vanilla extracts were the most interesting of all processes which they saw. Booklets were given them telling how spices, the vanilla bean, and coffee are cultivated and giving the principal cities which export them. These booklets and the information gained were used for some time in the geography lessons.

Such an activity as this could easily be guided into further activities, the experience could be shared with others, an auditorium program planned, or the information gained made the theme of a "party" to entertain other grades.

Sample of a Teaching Unit in Chemistry [2]

Testing the Hardness of Spring and Mineral Waters

This experiment is performed after pupils have learned simple tests for the salts most commonly found in ground waters. Each pupil is asked to secure a suitable sample,

[1] Los Angeles City School District — *Course of Study for Grades V and VI*, School Publication No. 90, September 1, 1924. Abridged.

[2] Francis W. Parker School — *Yearbook: Education through Concrete Experience*, Vol. IV, 1915, p. 121.

water from a spring or artesian well or a bottle of mineral water from the drug-store. A great variety of samples, from widely different sources, always results. At least one pupil may be asked to test the water used in the school boilers. The laboratory directions follow in full:

(*a*) Weigh a clean, dry, porcelain evaporating-dish. Weigh into it 100 grams of sample. Place on the steam-bath and evaporate to dryness. If necessary, finish the evaporation in an air-bath at a temperature of 120° C. Again weigh the dish and its contents. The weight of the residue is the amount of total dissolved solids.

(*b*) While evaporation is going on, to separate portions of the water apply tests for chlorides, sulphates, nitrates, carbonates. Perform any other tests which the instructor may suggest, to suit individual problems. Record the tests as very positive, positive, trace, or negative.

(*c*) Fill a burette with a soap solution made by diluting ordinary liquid soap (used in the school) with three times its volume of distilled water. Place 100 c. c. of the water you are testing in an Erlenmeyer flask. Add a few drops of the soap solution and shake. Continue adding the soap solution, a few drops at a time, and shaking until precipitation ceases and suds form. The number of c. c. of soap solution used indicates, comparatively, the hardness of the water.

(*d*) Dissolve the residue in the porcelain dish in a little diluted hydrochloric acid. Note whether a gas (carbon dioxide) is liberated. This will check the test for carbonate. Using a clean platinum wire and the hydrochloric acid solution, examine the spectrum of the residue. What elements are indicated by this test?

(*e*) What reasons can you see for softening the water to be used for laundry purposes and in steam boilers? What method can you suggest for softening the water which you have analyzed? Write equations for any reactions that have taken place in this testing.

Assignment

Examine the foregoing sample teaching units and answer these questions concerning at least three of them.

Questions for Discussion

How much school time does the teaching unit take?

Is the unit so clear as to make it possible for a new teacher to reproduce it?

Discuss the literary quality of the unit?

What kinds of activity or behavior does it involve?

How is the subject matter (facts or information) introduced?

Does it involve work with materials?

Does it utilize materials as they occur in life?

To what degree does it involve the exercise of all the senses?

Do you think it will result in the attainment of the objective?

To what degree are the pupils active?

Is the unit arranged in the most effective order?

Are the references complete and exact?

Does it state clearly where materials may be obtained?

Does it involve situations in which pupils are in social relationship to other pupils?

Does it involve planning and directing on the part of the pupil?

THIRTY-SEVENTH MEETING

AN EXERCISE IN MARGINAL CRITICISMS OF A TEACHING UNIT

You have just completed a thorough analysis of a number of teaching units based upon fifteen questions. These questions, in a sense, are possible criteria of a good teach-

ing unit. Perhaps you have become familiar with the more important of these questions. They should come to your mind when you are confronted by a new teaching unit which you wish to evaluate. If you have a copy of a teaching unit which may be marked up, you will very likely proceed to make marginal comments on it. This exercise is designed to give additional practice in criticizing teaching units, and also to suggest this convenient mode of criticism. If you have forgotten the questions which you used in criticizing the teaching units of the preceding meeting, it would be well at this point to review them. Perhaps it would be wise to have these questions before you as you make your marginal notes.

There are no rules governing your procedure in this matter. We are presenting, below, an illustration of how we should approach this task.

Assignment

Criticize the following teaching units by writing in the margins. If you wish you may select two printed units which may be defaced and make marginal criticisms of them.

Teaching Unit in Arithmetic[1]

I. Activities

1. Suppose each child in room has $2,000 to invest. Let each child study carefully the different places in which he may invest it, either as a whole or in parts. Make on board list of the possibilities open, and let each one choose the way he wishes to invest his

[1] Detroit Public Schools — *Course of Study in Arithmetic, Grades II to VIII*, 1924, p. 87, Grade VII.

FOURTH GRADE

September — The Moon

OBJECTIVE:

To recognize the various phases of the moon.

CLASS ACTIVITIES:

Why is it dark at night? Some nights are darker than others. Why?
when and how? Make observations of the moon.
Cut pieces of paper to represent the shape of the moon as you saw it.
Make blackboard drawings showing the different phases of the moon.
how? → Learn to recognize the full moon, first quarter, new moon, last quarter, eclipse.
how? → Find the length of time from new moon to new moon.
Keep a calendar record for a month. Make reports about twice a week.
re. reports of what? Consult newspapers for time of rising and setting.
Note the changes in the position of the moon in the sky.
What relation does the moon have to the earth? Discuss briefly.
Compare size of moon with size of earth.

REFERENCES:

initials lacking → Newcomb.....Astronomy for Everybody.
Comstock.....Handbook of Nature Study.
pages, publisher, and publication date lacking

VISUAL MATERIAL:

The sky.
Pictures of the moon.
Blackboard drawings of the moon.

Criticism: This seems to be a good unit if it is possible to carry it out.
The order of activities needs revision.
The unit can be more graphically written.
Paragraph structure would improve the appearance.

MARGINAL CRITICISM OF A TEACHING UNIT IN ELEMENTARY SCIENCE

money. During the period given to this topic, the rate of interest on bonds may vary, the price of real estate may go up or down, rents may vary — children may sell and buy again. Have each one compute net income for a year.

II. Content

1. To give general information about
   (*a*) Safe places to invest,
   (*b*) Variations between returns from different investments.
2. To give practice in computing returns on investments. (R. H. 175–178)

III. Information

Places to invest money safely
1. Postal savings deposits
2. Government bonds
3. Municipal bonds
4. Savings banks
5. Lending money on notes or mortgages well secured
6. Buying property wisely

A Teaching Unit in Social Studies [1]

Transportation

Transportation of People and Commodities:

Discussion of modern modes of transportation.

Construction of simple models.

Specific purposes: supplying market, ob-

[1] Baltimore Department of Education — *Geography, History, Arithmetic: Course of Study for Kindergarten and Grades I, II, and III*, 1924, pp. 15–16.

taining building materials and fuel, meeting needs of people.

Problems:

If father were going to build a house, how and where would he get the materials?
If our class wished to go to Druid Hill Park, how could we get there?
How does the milk get from the farm to our doors?

Activities:

Simple representation on sand table or floor showing relation of school to park and main streets along the route; construction of conveyances similar to the ones in which we might go; making community pictures showing various kinds of vehicles seen on way to park.

References:

CHAMBERLAIN, *How We Travel.*

PART VII

COMPOSING TEACHING UNITS

THIRTY-EIGHTH MEETING

THE QUALITIES OF A GOOD TEACHING UNIT

We have devoted three meetings to an inductive study of several teaching units. We have had an opportunity to observe their good and poor qualities. With this background of experience in evaluating teaching units, the student should be prepared to draw up a statement giving his idea of what constitutes a good one. In practical curriculum making, such a list of the characteristics of a good teaching unit should be used, first, as a means of guidance in composing teaching units and, second, as a basis for criticism of those already prepared. When a committee sits down to decide whether a certain teaching unit is ready to be incorporated in a new course of study, it is wise to have such a statement of the qualities of a good unit before the group for reference. The following is an illustration of a teaching unit that embodies some of the good qualities which in our opinion it should possess. The primary aim was to give a graphic account of a school activity which would help the pupil to light his home more effectively.

The unit involves a variety of activity, or behavior, including answering questions, observing demonstrations, discussing, preparing materials, comparing processes and so on. It brings into the classroom the actual materials as they occur in life. It calls into action the sense of sight to a considerable degree because this teaching unit involves the visual organs particularly. At no point in the procedure does it deviate from its main purpose, which is to help the pupil to light his home effectively. The essential facts that

one ought to know about illumination are introduced incidentally, that is, there is no separation of subject matter from the description of the procedure. In the procedure there is a complete fusion of things to be done and things to be known. At many points in the teaching unit, the pupils are called upon to take part in the activity. The materials are given specifically. The assignment is exact and references are complete and specific. The assignment indicates that there is a considerable opportunity for the children to plan and direct the activity.

A Teaching Unit on Lighting

Objectives

To choose the most helpful lighting equipment.

To determine what is adequate illumination for the home.

Procedure

How much sunlight do we have in this community? What do we use in place of sunlight? What do you use to light your home? If possible, burn these materials in succession (candle, flat flame gas jet, gas mantle, incandescent lamp). Discuss the order of brightness of these illuminants. Put the following table on the blackboard and discuss it briefly:

Relative Brightness of Common Illuminants

Tungsten Lamp	1500
Gas Mantle Light	30
Gas Flame	7
Kerosene Light	7
Candle	3

Which of these lighting materials is best for health? Here develop the idea that the electric lamp does not

change the composition of the air and is steadiest. If gas mantles are burned in the community, burn several types and compare their brightness.

Burn a bright clear lamp between the eye and a Snellen Chart or a picture. Have a pupil in the back read the chart or look at the picture. Also have a pupil observe the effect of the glare. Some pupils will start or show irritation. Burn the same lamp under a shade or in a way to throw the light on the Snellen Chart or object without producing a glare. Observe the ability to read and the comfort of the pupils.

Using a model, chart, or board diagram of the eye, discuss it briefly to show that it is an organ which makes delicate muscular adjustments. Show what happens when there is a glare, inadequate light, or too much light. Turn all lights off, have pupils look at each other's eyes, then turn on the light suddenly and observe what happens.

Burn a dim shaded lamp over a Snellen Chart. Have a pupil in the rear read it. Burn a bright lamp and have the same pupil read it. What is the effect of inadequate lighting?

Burn the following colored lamps against a Snellen Chart in succession and have a pupil in the rear read it: blue, red, green, canary, frosted, and clear. Have the class notice the difference roughly. Later put the following table on the blackboard and discuss it briefly:

PER CENT OF LIGHT ABSORBED BY LAMP GLASS

Clear glass	12 to 15%
Canary	15 to 20%
Flame	30 to 60%
Signal green	80 to 90%
Ruby	80 to 90%
Dark blue	90 to 95%

Compare the clear and frosted lamp to show the loss in illumination of the frosted and the importance of allowing for this loss in purchasing the latter.

Using a common table or floor lamp, fit paper shades, previously cut out and of different colors, under the regular shade. Observe the loss in light produced by the colored shades.

Set up two screens or small packing boxes, open at the front. Line one with white paper and the other with dark paper. Light the two interiors with lamps of the same wattage and observe the result. Discuss briefly the effect of colored walls on illumination with aid of the following table :

HOW THE VARIOUS COLORED WALLS REFLECT LIGHT

Color of Walls	*Per Cent of Reflection*
White	80
Chrome yellow	60
Cream	55
Light orange	50
Pale green	45
Yellow	40
Light pink	35
Light blue	25
Brown	20
Blue-green	10
Maroon	5

Bring in various table lamps and compare them with respect to shape of the shade. Discuss its suitability for different purposes. If actual lamps are not available, use pictures of lamps. Have several pupils place the lamp in various positions for writing and arrive at the best position. If possible, do the same with floor lamps.

Have the class volunteer the most important facts of the lesson. Put these on the blackboard as given by the pupils.

Materials

Candle, flat flame gas jet, gas mantles of several kinds, bulbs of wattage from 50 to 150, frosted bulb, bulbs of several colors, shades, reflectors, colored lamp shades, two screens or packing boxes, extension wire, table lamps and floor lamps or pictures of these, model or chart of the eye, Snellen Chart, large sheets of white paper, large sheets of dark colored paper. The unit requires a dark room.

Assignment

Have some pupils interview the storekeeper to determine what the most common lighting materials used in the neighborhood are. Have some pupils find out what the most common gas mantles used are. Have some pupils find out what the most common kinds of incandescent lamps used are. Have pupils bring in some materials listed above which are otherwise unavailable. Have pupils read any of the following references if they are available:

Webb, H. A. and Didcoct, J. J. — *Early Steps in Science*, pp. 46–87, Appleton, 1924.

Hodgdon, D. H. — *Elementary General Science*, pp. 365–385, Hinds, Hayden, and Eldredge, 1918.

Essential Facts

Electric lamps are most comfortable for lighting. The tungsten lamp has the greatest brightness. A lamp should never be burned without a shade to hide the glare. Colored bulbs, colored lamp shades, and walls reduce the brightness of a lamp. The bulbs of table lamps and floor lamps should not shine directly into the eye.

THE QUALITIES OF A GOOD TEACHING UNIT

1. The teaching unit should have a useful purpose.

2. It should reproduce actual life situations as far as possible.

3. It should utilize materials as they occur in life.

4. It should involve a variety of direct sense experiences.

5. It should provide a considerable amount of pupil activity.

6. It should provide for some free, informal association of the pupils.

7. It should provide an opportunity for the pupil to originate, plan, and direct the activity, as far as possible.

8. It should provide an opportunity for manipulative or bodily activity.

9. It should be pleasant.

10. It should provide opportunities to judge, choose, and evaluate.

11. It should contain accurate information.

12. It should be within the available time for the unit.

13. The exposition should be clear enough to make it possible for a new teacher to reproduce the experience.

14. It should state clearly where materials may be obtained.

15. When references are given, they should be complete and exact.

Assignment

Go back to your notes of the last three meetings and sum up the criticisms which you have made of the teaching unit. With these notes as a basis, proceed to draw up a list of qualities of a good teaching unit. Remember that it is not at all expected that your own opinion of the good qualities shall agree with the ideas set forth in this section. Submit your statement in writing.

THIRTY-NINTH MEETING

DETERMINING THE MAIN HEADINGS OF A TEACHING UNIT

In examining the sample teaching units at the last meeting we observed that they were organized under a variety of main headings. It is necessary to determine rather definitely what main headings will suit a particular subject or a particular group of persons, making a course of study. This does not mean that it is necessary to follow slavishly the same headings in composing every teaching unit. It merely supposes that most of them are likely to be organized in a uniform way.

Determine the main headings which will form the outline of most of your teaching units.

There is, at the present time, no tendency toward a generally accepted set of main headings to serve as a skeleton for a teaching unit. It is not necessary that there shall be a uniform practice in this matter, but it is important that no essential part of a good teaching unit shall be neglected. It has already been pointed out that a good teaching unit must consist of at least two parts, namely, the objective and the activity. The objective is the specific goal of the unit and the activity is a description of the school experience engaged in by the pupil to attain it. Tentatively, we should like to propose the following headings as a basis of further criticism.

Proposed Main Headings of a Teaching Unit

Objective — The specific useful goal of the unit

Procedure — What is done in school to achieve the objective. It is a description of all the important experiences of the group during the one teaching unit. It is stated

in such a way as to make it possible for a new teacher to reproduce the experience.

Materials — All the equipment except reading matter used in the teaching unit

Assignment — A clear and explicit statement of what you wish the pupil to do in preparation

References — Printed material used in the teaching unit

Essential Facts — A few brief statements of facts which you expect the pupil to remember permanently and which you could reasonably expect the pupil to give in future tests

The heading SPECIFIC GRADE STANDARDS OF ATTAINMENT is suggested as an integral part of the printed curriculum by some persons. For most subjects this is not necessary if the objective has been stated with sufficient definiteness. For example, if you examine the *Detroit Course of Study in Social Sciences, Grades I to VI*, 1923, you will find a list of general aims (really objectives for the grade) followed later by a list of specific grade standards of attainment of approximately the same length. Under GENERAL AIMS you will find this statement: "To acquaint the child with the everyday natural phenomena such as the sun, moon, stars, snow, rain, hail, wind, clouds, land, water, and fire." Under SPECIFIC GRADE STANDARDS OF ATTAINMENT you will find this statement: "The ability to form some conception of everyday natural phenomena such as sun, moon, stars, snow, rain, clouds, wind, land, water, and fire." It is obvious that the second statement is merely a restatement of the first, and, therefore, unnecessary. The elimination of the second statement should have the effect of producing a clearer and more specific statement of objectives or goals to be achieved as the result of any activity unit.

Some recent courses of study contain headings which

overlap. For example, the recent St. Louis courses of study list the objectives in one column and the outcomes in another. When one examines them he finds that the latter sometimes duplicate the former and more frequently simply give them in greater detail. A much more effective arrangement is to list the objectives in as much detail as necessary in one column. Earlier we pointed out that an objective and an outcome are the same viewed from two standpoints. The former is viewed as a goal and the latter is viewed as an end-product. In this particular case the difference appears to be in degree of definiteness of the goal.

In these courses of study there is also an overlapping of a column entitled SUGGESTED ACTIVITIES and another entitled SUGGESTED PROCEDURE. The activities should be a part of the procedure and, indeed, they are in this particular course of study. Again we find that usually the latter column contains in greater detail what is contained in the former.

Another course of study takes the space of saying in three statements under three headings what could be stated in one statement under one heading. For example, under the heading PRACTICE: to sleep with windows open; under KNOWLEDGE: to know how good ventilation may be secured; under ATTITUDE: to like to sleep with windows open. All three are objectives of one teaching unit. As a matter of fact, these three objectives concern one life situation or one habit. The three, therefore, may be reduced to one objective: to sleep with windows open. The knowledge is incidental to the habit to be formed and will be introduced anyhow. The development of the attitude, too, is desirable but it is anterior to the practice. Every life situation may involve the mastery of knowledge and the development of an attitude, but they all belong together and are best stated as a habit to be formed.

Some Main Headings Used in Courses of Study

ACTIVITY [1]	OBJECTIVES [2]	OBJECTIVES [3]	OBJECTIVES [4]	UNIT OF WORK [5]
MATERIALS	PROCEDURES	SUBJECT MATTER	CLASS ACTIVITIES	ACTIVITIES
PRESENTATION	SUBJECT MATTER,	ACTIVITIES	VISUAL MATERIAL,	METHOD
	REFERENCES,	EQUIPMENT	REFERENCES	MATERIALS
	STANDARDS OF ATTAINMENT	BIBLIOGRAPHY		REFERENCES
				STANDARDS OF ATTAINMENT

Assignment

Examine a number of teaching units and courses of study and carry out the following directions in writing:

List the main headings of a teaching unit in each course of study.

In one list give all the headings which were used at least once in the several courses of study you examined.

Define briefly the meaning and scope of each heading.

List the headings which you would use. Justify the ones you selected.

Explain briefly why you excluded others.

Questions for Discussion

Is it necessary to indicate the assignment under a separate heading?

Is it possible to list the essential facts under procedure?

Is it necessary to list the essential skills as well as the essential facts?

[1] Detroit Public Schools — *Arithmetic Developmental Lesson Units*, 1925.
[2] Wisconsin Department of Education — *A Course of Study for the Elementary Schools of Wisconsin*, 1923.
[3] Cincinnati Public Schools — *Tentative Outline of Number Work for Primary Grades*, 1924, pp. 7–16.
[4] Cleveland Public Schools — *Course of Study in Elementary Science*, 1926.
[5] Detroit Public Schools — *Course of Study in Art Education*, Intermediate Schools, 1923.

Why not list the essential facts as objectives?

When questions are listed under the procedure, are they to be used formally or incidentally?

Why should method and content not be separated in the teaching unit?

When a course of study shows unreasonable lack of consistency in the form of the teaching unit, what does it show?

FORTIETH MEETING

VARYING FORMS OF A TEACHING UNIT

The form of a teaching unit in most printed courses of study is directly related to the main headings, the skeleton outline. There are several common forms used which are not equal in effectiveness. It is necessary to state these forms, to compare them, and to determine which of them one wishes to adopt.

A fairly thorough analysis of published courses of study reveals several forms which are most commonly used at present. We shall discuss these in turn.

The Course of Study Arranged in Parallel Columns

Below are two teaching units arranged in three and four parallel columns. There seems to be no particular advantage in printing one's material in this way. A glance at the following teaching units will show that there is an unnecessary waste of space. The pressure to get one's material within the narrow space of a column without stretching it out too much tends to cramp one's expression. This is fatal to good composition. On the other hand, the many blank spaces tempt one to expand certain portions unnecessarily.

Furthermore, it is difficult to read such a course of study. The curriculum maker should bear in mind that one's natural habits of reading are based upon the solid paragraph arrangement with center headings at convenient places. Any other form conflicts with these well established reading habits. There is no reason why the parallelism or logical connection between the parts of a teaching unit should not be obvious to any literate person if they are printed as successive paragraphs. Some courses of study are printed in two parallel columns. These give the impression of incompleteness. The objectives run on, without any suggestion of organization into large subdivisions according to topic or time. They seem to indicate haste in setting down objectives and fragments of activities immediately available.

The Course of Study as an Informal Descriptive Statement

A large number of courses of study consist of informal descriptions of the school activities without any attempt at organization of the material under main headings. These descriptive statements are especially characteristic of most of the project curricula. We have found courses of study of this type the most readable of all. They show a conscious effort on the part of the writer to be clear, forceful, and graphic. They are the most interesting to read of all courses of study and consequently are probably the most widely read. There is no effort to economize at the expense of clearness and effectiveness of style. The informality of expression makes it possible for the writer to convey something of the atmosphere and spirit of the activity and of the responses of the children. These are exceedingly important elements in a teaching unit and that curriculum maker is fortunate who can effectively convey them. Some informal descriptions of activities include stenographic reports of the

A Teaching Unit in Parallel Columns [1]

Suggested Activities	Content and General Purposes	Arithmetic Idea or Principle and Form
I. *a.* Passing Material. Counting out correct number of sheets of paper, books, in order to pass material to room in preparation for a game, for a special lesson, etc., each child receiving one or two articles each *b.* Arranging for a Picnic. Planning a picnic for room and counting out the number of sandwiches, cakes, oranges, candies, bananas, cups, spoons, plates to take *c.* Making Things. Making Christmas presents for the kindergarten, and finding out the number required by counting kindergarten children *d.* Playing Theater, as in B2 (See B2, Suggested Activities.) *e.* Playing Games. Playing games on the playground, and counting out the children for each side *f.* Counting Things. 1. Counting the number of seats in two rooms to see which one will accommodate more pupils 2. Counting the number of automobiles there are parked in front of churches, theaters	I. Counting concrete objects from 30 to 100. *a.* To be able to play games, count out materials, plan provisions for picnics and parties.	In the early stages of Arithmetic, numbers should only be used in conjunction with concrete objects, as suggested in the activity column. Through experiences of that type the number concepts and meanings will be developed.

[1] Detroit Public Schools — *Course of Study in Arithmetic, Grades II to VIII*, 1924, pp. 12–13, Grade 2.

A Teaching Unit Printed in Parallel Columns [1]

Hygienic Activities	Materials	Outcomes	Methods
Selecting places to work	Windows Doors Thermometer Ventilator Rooms Floor Table	Appreciations — 1. Care of the room 2. Arrangement of the room Habits and Attitudes — 1. Sensing heat conditions of the room 2. Keeping floor clean Skills and Facts of Knowledge — 1. Not to face light or to have sunshine on work 2. To keep out of draughts 3. To choose appropriate place for certain activities	Talks of the best way to find places. If group work is planned, aim to guide the children in the selection of a place so that the work can remain several days and not interfere with the second class Many projects cover a period of time. If room is arranged with reference to the economy of space and handiness, the children should not cross one another's paths in free work time.

classroom procedure. Such reports give in adequate detail the verbal expression of the teacher and pupils but sometimes they fail to give a complete account of other modes of expression, such as observing, constructing, experimenting, and so on.

Their chief limitation is the failure to give in convenient form certain helpful information as materials, references,

[1] Denver, Colorado, Public Schools — *Course of Study, Monograph Number One, Kindergarten*, 1924.

assignments, and essential facts. They are frequently included in the informal statement and if the teacher can be relied upon to select and organize them, the result is not unsatisfactory.

AN INFORMAL TEACHING UNIT [1]

Why Did Men Start a Settlement at This Particular Place?

From their readings in history, the children get the fact that the primary reason for the white men settling here was because it was a common meeting-place for the various tribes of Indians who lived in the surrounding region. This at once gives rise to the question of how the Indians came to hold their councils here — a question that can be answered best by science, through a study of the physical characteristics of the country. By modeling this section of the country in the sand- or delta-table, and by using a large relief-map of the United States, the children come to some realization of the accessibility of Chicago by reason of its situation. They also note that the various waterways were used as travel routes by the Indians, French voyageurs, and fur-traders.

Within an hour's ride on the train, we have a good reproduction of some of the physical conditions that existed in Chicago when white men first settled here. Therefore, a trip to the sand-dunes of Indiana gives us one starting-point for the science work. The abundant life in the swamps, both vegetable and animal, furnishes another obvious answer to the question of why the Indians came here. Plants, such as the wild rice, besides furnishing food for the Indians, attracted the game birds in countless numbers; and the birds, as an abundant food supply, in turn, attracted the Indian hunters.

[1] Francis W. Parker School — *Yearbook: The Course in Science*, Vol. V, 1918, pp. 48–50.

All the Material of a Grade Presented as One Unit

Quite a large number of courses of study present the work of an entire grade under several headings, such as objectives, activities, references, and so on. This, necessarily, must be brief and sketchy and therefore runs the risk of being incomplete.

The objectives and the activities are stated separately (two separate lists). There is a vague relationship between the activity and the objective. At any rate, there is no assurance of the direct connection between one specific goal and its corresponding activity. For example, a public school course of study contains the specific goal "to encourage a feeling of responsibility for the conservation of plant and animal life." When one examines the activities which are printed in a separate statement, he finds that the activity which most nearly approximates this goal has to do with the mounting, recognition, and drawing of plants; but there is no mention or suggestion of conservation. Such a discrepancy between an objective and its related activity would be less likely to occur if the two were combined into one distinct teaching unit.

Furthermore, the arrangement here discussed leads to general plans of activity which stray from the specific purposes. It offers the temptation to be verbose without being held accountable for workable units of classroom activity. There is no assurance that each unit of instruction has been thoroughly and definitely tried out, planned, and recorded. It is impossible to give an illustration of this arrangement of a course of study here because of the limitations of space; but one should have no difficulty in finding an illustration because it is a very common state of affairs.

The Combined Textbook and Course of Study

There are a few printed courses of study which are a combination of a lesson plan and textbook material. In other words, the course of study not only describes the nature of the classroom activity, but it also includes a detailed statement of the related subject matter. The advantage here, of course, is to put in the teacher's hands all the information she needs in order to carry on a teaching unit. It is one additional aid to the teacher beyond that offered by the ordinary course of study. The inclusion of the informational content has several disadvantages, however. The subject matter may be lacking in accuracy and it will not always be up to date. Perhaps, too, this has the effect of discouraging individual research in the collection of the data necessary in classroom instruction.

A Unit Combining Procedure and Text Material[1]

The Linen Industry

The world's annual production of flax is from one and one-half to two billion pounds. The annual crop in bushels is about 103 million. The linen industry is carried on extensively in the British Isles, France, Belgium, and Holland. The value of linen exports from the United Kingdom in 1913 was about forty million dollars, of which Ireland contributed four-fifths and Scotland most of the rest. Of these exports, the United States takes about one-half. The total production of linen goods in the United States in 1909, consisting of twine, thread, and coarse toweling, was valued at about six and a half million. Production of fine linens in this country has not been profitable due to the great amount of hand labor required (labor is so much cheaper in foreign countries).

[1] St. Cloud, Minnesota, Public Schools — *Fine and Industrial Arts, Grades I to VI*, 1924, pp. 216–220. Abridged.

Method of Approach

The suggestions given in the General Outline, page 216, should be carried out. The simplest way to test for linen is to wet the finger and touch it upon the cloth. If the cloth is quickly moistened, it is linen; if not, it is undoubtedly cotton. The letters to manufacturers may be written by a small group in the composition period. The experiment of distinguishing between animal and vegetable fibers in *Industrial Arts for Elementary Schools*, page 170, may also be done by a group, demonstrating to the class. Another group may unravel pieces of underclothing and compare them with an ordinary woven fabric.

In the discussion of the characteristics of fine fabrics, the texture, patterns, color schemes, and different weaves should be brought up.

As sewing is not taught until the seventh and eighth grades, clothing is only touched upon here. However, in connection with cleanliness under hygiene, the care of the clothing should be discussed. The purpose of clothing as a protection against the weather and the use of the appropriate dress for school wear may be included. The study of the clothing and dye industries is given in more detail in the seventh grade, where elements of costume design can be included.

Bibliography

The New International Encyclopedia, Vol. VIII and XIV.

Keller and Bishop — *Commercial and Industrial Geography.*

Bonser and Mossman — *Industrial Arts for Elementary Schools.*

Winslow — *Industrial Arts.*

Edith Very — *Warp and Woof;* Book I of *The Linen Industry.*

An Organized Description of a Teaching Unit

In our opinion, the form which is most promising is a clear and graphic account of the procedure organized under main

headings as illustrated in the following teaching unit. The subject matter is introduced incidentally. There is no attempt to give in detail the facts to be learned, but there is a suggestion of the direction which the discussion is to take. The things which the children are to do are described. Whenever possible, the atmosphere of the activity and the reactions of the children are suggested. The form usually includes the objective or specific goal and a description of the classroom experiences or activities. It gives a lucid account of what is done by the class, including the teacher. In addition, it may furnish any other aids in carrying on the lesson, such as a list of materials, questions for discussion, an assignment, charts, reviews, and essential facts.

A Teaching Unit on Ventilation

Objective

To keep a room properly aired and at the right temperature.

Procedure

What does breathing involve? After showing that it involves an exchange of exhaled for inhaled air, place the following chart on the board and discuss it briefly:

Composition of Inhaled and Exhaled Air

	Inhaled Air Per Cent	*Exhaled Air* Per Cent
Nitrogen	78.	78.
Oxygen	21.	16.
Carbon Dioxide	.003	4.4
Water Vapor	Small amount	Large amount

What changes go on in a room which gets little fresh air? The discussion and, if possible, observation lead to the conclusion that in a room without fresh air the amount of oxygen decreases and carbon dioxide, body odor, temperature, and moisture increase; and the air is still.

What is the effect of bad air on comfort and health? The discussion and possibly an actual experience in the classroom should develop the points that bad air causes discomfort, fatigue, headache, sleepiness, increase in body temperature, decrease in appetite and in efficiency, and increased susceptibility to respiratory diseases. The data of the investigations of the New York State Commission on Ventilation may be used to support these facts.

Is carbon dioxide harmful? The presence of carbon dioxide in the breath might be demonstrated by obtaining a small bottle of lime water from the drug store. Blow your breath into the bottle through the glass tubing and shake it. The white cloudiness indicates carbon dioxide.

What is the real cause of the ill effects of bad air? Develop the idea that the warm, moist, and motionless atmosphere interferes with the dissipation of the body heat and moisture.

What is the relation of humidity to the quality of the air? The following chart may be used to discuss this question:

EFFECTS OF HUMIDITY AND TEMPERATURE

Humidity	Temperature	Perspiration	Evaporation	Feeling	Remedy
75% moist	warm	much	little	uncomfortable; sticky	Use a fan to increase evaporation.
75% moist	cold	little	little	chilly damp	Heat
30% very dry	warm	much	too much	dry, parched skin	Put a pan of water on the radiator or stove.
30% very dry	cold	little	little	comfortable	
50% moderately moist	warm	much	much	comfortable	

What constitutes good air? The discussion should develop the following ideas: that it is no higher than 68° in temperature; that it has a humidity of 25 to 50 per cent; that it is in motion (not stagnant).

What can be done to get good air in the home? The discussion should show that each home should own a thermometer, that windows should be open at the bottom, while deflecting boards at the bottom may be used to keep out a draft; that a room should be equipped with radiators underneath the windows; that windows should be open at the top. A diagram on the blackboard may be used to show how the air enters through the bottom of the window, how it is heated, how it circulates, takes up the moisture from the skin, and passes out at the top of the window. Demonstrate the use of a deflector with the aid of an ordinary board.

Materials

A small bottle of lime water, piece of glass tubing, a deflecting board

Assignment

Answer the following questions briefly in writing: What changes go on in a room without fresh air? What is the effect of bad air on comfort and health? How may we get good air in the home?

Read one of the following references, if available:

GRUENBERG, B. C. — *Biology and Human Life*, Ch. 16, Ginn, 1925.

HODGDON, D. R. — *Elementary General Science*, pp. 171–182, Hinds, Hayden, and Eldredge, 1918.

WEBB, H. A. AND DIDCOCT, J. J. — *Early Steps in Science*, pp. 77–81, Appleton, 1924.

TRAFTON, G. H. — *Science of Home and Community*, pp. 17–26, Macmillan, 1919.

Essential Facts

Bad air means a decrease in oxygen and an increase in carbon-dioxide, body odor, temperature, and moisture. Foul air causes discomfort and increases susceptibility to respiratory diseases. Warm stagnant air decreases efficiency and the appetite. Good air is no higher than 68°, has a humidity of 25 to 50%, and is in motion.

It is impossible at this time to say with finality what the best form of a teaching unit should be. It will require considerable experimenting with existing forms and with forms yet to be devised. Thus far, there has been no attempt to determine objectively the form of presenting a teaching unit which is most comprehensible and most readable. There is considerable opportunity here for pioneer work in the field of curriculum making. Courses of study will become most effective when superintendents and curriculum makers emulate writers and publicists in other fields who have succeeded in conveying their messages to their readers.

Assignment

Examine several courses of study under each form and answer the following questions in writing:

What are the advantages of this form?

What are the disadvantages of this form?

What form do you propose? Justify it.

Explain briefly why you would reject the other existing forms of the teaching unit.

Questions for Discussion

What is the relation between the main headings and the form of a teaching unit?

What is the assumption upon which the arrangement of a teaching unit in parallel columns is based?

What is the effect of economy of expression on the effectiveness of a teaching unit?

What is the most common form of printed matter and how does it affect the form of a teaching unit?

How can the atmosphere of an activity and the reactions of the pupil be conveyed in a teaching unit?

What is the effect of stating objectives and activities in separate lists?

What is your opinion of including detailed informational content in a course of study?

FORTY-FIRST, FORTY-SECOND, AND FORTY-THIRD MEETINGS

COMPOSING A TEACHING UNIT

Proceed to compose teaching units, one at a time, in a form for publication.

The problem here is actually to compose or write a teaching unit in a form suitable for publication. As a preparation for this task, we have (1) agreed on the nature of the school activity, (2) inspected some courses of study which describe school activities, (3) criticized several actual teaching units, (4) determined the qualities of a good teaching unit, (5) determined the skeleton plan or main headings of a teaching unit, and (6) determined the form which a teaching unit should take. With this background, we are now prepared to undertake the task of original composition. It should be remembered that we wish to describe a school experience which an average teacher should be able to reproduce.

In planning the teaching unit, these suggestions may be helpful: (1) If you have taught the material, describe your own procedure. (2) Review the several qualities of a good

teaching unit which you have determined and introduce these qualities. (3) Follow the skeleton plan which you have found most satisfactory. (4) Use the form which you have found most satisfactory. (5) Get what help you can from the procedure used by others in connection with your particular unit of instruction. (6) Keep the objective constantly in mind in planning the unit. (7) Keep the pupils constantly in mind in planning the unit. (8) When you have completed the teaching unit, test it according to the criteria of a good teaching unit which you have set up.

We are now approaching the point where teaching units begin to be ready for publication. Teaching units composed by one person should never be written into a course of study before a thorough process of revision, usually carried on by a committee.

Before the unit is actually ready for publication, it is criticized by one's coworkers, usually of the curriculum committee. Several clear and adequately spaced copies should be typed for this purpose. The unit is then rewritten to incorporate the suggestions made. To be a really workable teaching unit, it should be tried out and criticized by several teachers. It is revised in accordance with the needs of the teaching situation and is now ready to be adapted for publication.

Assignment

Select an objective in your special field and plan a complete teaching unit as it should appear in a printed course of study. If possible, bring individual typewritten copies for all the members of the class. In effect, the class organizes itself as a curriculum committee and passes upon the teaching units submitted by the members. It should be remembered that the student prepares three teaching units for three successive meetings.

FORTY-FOURTH MEETING

COMPOSING A TEACHING UNIT (*Continued*)

In composing a teaching unit, the aim is to describe the school experience in such a way as to enable an average teacher to reproduce it. An excellent exercise, therefore, is to observe a particular school unit of teaching and to record it for purposes of publication in a course of study. Indeed, it is very essential in some cases to gather curriculum material in just this way. It would be helpful to organize the material under a set of headings suitable to the particular unit which is being described. The sample teaching units examined previously might serve as suggestive bases for the present task.

Below are illustrations of three attempts to describe what actually was seen in the classroom. Only the activity is described. The objective in these three illustrations is *to change electrical energy to mechanical energy.*

I

Children operate electrical train on track. Connected wire to batteries — train moved. Disconnected wire — train would not move. Children use magnets and compass. Show the effect of like and unlike poles, magnet and iron filings on paper. Note the effect. Child drew picture on board. Make electricity — iron rod and silk for positive, sealing wax and silk for negative. Children operate electromagnet, motor, and windmill to show changing of electrical energy to mechanical energy. Electrical energy is changed into mechanical energy by means of wheels or devices and by use of a motor.

This description is fairly clear. It is doubtful, however, whether the inexperienced teacher can reproduce the activity. It shows what operations the pupils will perform. It sug-

gests that discussion occurs at certain points in the lesson. Its defects are chiefly those of English composition. Notice, for example, the changes in tense and the faulty sentence structure.

II

> Explanation of magnetic field — illustrations. Explanation of kinds of electricity — demonstration of positive and negative. Questions to make work complete. Drawings on board — magnet illustrated. Engine explained and run — why did it run? Explained how electrical energy was transformed to mechanical energy. Illustrated principle.

You notice that whereas the first description emphasized the children's activity, the second description emphasized the teacher's activity. Of course, both are necessary to make a teaching unit clear. The chief difficulty with this description is its lack of complete details. We know little of the questions, drawings, and facts which are introduced. It illustrates how several kinds of activity may be introduced. The activities included are explanation, demonstration, questioning, drawing, and mechanical operation.

III

> Operating train. Observe magnet with iron filings. Drawing of magnetic field on board. Kinds of electricity discussed, — child makes electricity sealing wax. Dry battery, switch, magnetic, result with compass. Coil of wire with electricity running through will produce a magnetic field.

It is obvious that the last statement would be inadequate for publication in a course of study. It lacks clearness and it is incomplete. Notice the change in tense. Notice that the present participle (operating) and the verb (discussed)

are used in the description. One or the other should be used throughout. Also notice the common language errors.

Assignment

Visit a class and compose a teaching unit based on what you observed. Present your statement under the main headings which are most appropriate for your purpose or in any other form which meets your requirements. Supply any details which will make the teaching unit complete. Remember that it is your aim to describe a teaching unit in such a way as to enable an average teacher to reproduce the experience which you observed. If possible, bring enough typewritten copies for all members of the class. The class discussion will consist of criticism of the teaching units submitted, approximating the conditions of an actual committee at work.

PART VIII

FINAL STEPS IN CURRICULUM MAKING

FORTY-FIFTH MEETING

INTRODUCING SUFFICIENT REPETITION TO ASSURE PERMANENCE OF LEARNING

When a course of study is complete we must pause to give attention (if we haven't already done so) to an important psychological principle — that a habit is not permanently fixed unless it has been given a sufficient amount of practice or repetition. It is, therefore, necessary to analyze our course of study, to select the elements which are fundamental and to repeat them at appropriate intervals. There is no law which one may conveniently follow in this matter. Research may reveal some usable formula, but for the present one needs to bear in mind the general fact that a habit is weakened unless it is exercised over a period of time. With this fact in mind, one should be guided by good sense. The use of tests at regular intervals to discover whether objectives have been achieved is of course an important aid and this will be discussed separately at the next meeting.

Several fine textbooks have been produced which include practice material, but we have been able to find hardly any courses of study which give complete systematic attention to this matter. It is obvious that a complete program of instruction should not neglect to include those units which involve practice or review. We should be very much concerned about the form which the practice or review exercises take. No curriculum maker can be satisfied with a course of study which by neglect of the proper provisions for practice, vitiates the results of careful planning.

In teaching spelling, the need for practice of new words is evident. In this field, therefore, we find several spellers

which are designed to give adequate opportunity for practice. For example, the *Horn-Ashbaugh Speller* is so arranged that a word recurs five times at proper intervals: the first day, the third day, the fifth day, a month later, five months later.

Select the elements which are fundamental and repeat or recombine them at appropriate intervals in order to assure permanence of learning.

In practical curriculum making the preparation of a review exercise presents the same problems as the composition of any teaching unit. The essentials are selected from one section of the course of study and are presented again a little differently. It is impossible to predict the exact form of the review. All that has been said concerning a regular teaching unit applies to one devoted to review. It should embody the qualities of a good teaching unit.

To illustrate a review, we give below a unit which was designed for a high school course in health. The course of study had devoted six meetings to a consideration of community and home health. At this point it was considered appropriate to introduce a unit which would review the essentials. These were selected and an entirely new procedure was planned. An analysis of the review exercise would reveal that it includes the fundamental elements of the course pertaining to water supply, garbage disposal, communicable diseases, extermination of pests, home lighting, and ventilation.

Objective

To review the essentials of community and home health

Procedure

The assignments necessary for this unit should be given so that the student will have a sufficient amount of time to make the necessary preparation.

A student takes the class on an imaginary tour of the city's filtration plant. It will be necessary to prepare illustrative material to make the description vivid. The class should be free to ask questions. It is obvious that the student reporting will have actually made a tour of the plant himself.

A student reports to the class on the method of garbage disposal used in the city. He will have to familiarize himself with the procedure from direct observation and be prepared to answer any questions which the class may ask. By means of pictures or other illustrative material, he demonstrates the proper method of garbage disposal.

A student writes to the local department of health to determine the steps followed in quarantining for smallpox. He reports to the class and answers questions. Another student interviews a family which has been quarantined and makes a similar report.

A student reports on the procedure to be followed by an average family in exterminating flies, cockroaches, insects, and vermin. He brings in any papers or materials necessary to aid in making an effective report. He discusses the sanitary reasons for this measure.

A committee of five students prepares a demonstration to bring out the following facts: electricity is the best and most satisfactory means of illumination; a bulb should always be hidden by a shade; colored bulbs, lamp shades, and walls reduce the brightness of a lamp; the bulbs of table lamps and floor lamps should not shine directly into the eye.

A committee of five students prepares a demonstration to show that bad air decreases in oxygen and increases in carbon dioxide, body odor, temperature, and moisture. A committee of students makes observations in several days to show roughly that bad air causes discomfort, fatigue, headache, sleepiness, and loss of appetite. It reports the results of these observations to the class.

A committee of two reports on the characteristics of good air and proceeds to describe several situations which depart from these characteristics. Each situation should include information concerning humidity, temperatures, perspiration, evaporation, bodily feeling.

ASSIGNMENT

1. The theory underlying the present step is found in the following references which should be read by those who are not familiar with the psychological principle involved :

GATES, A. I. — *Psychology for Students of Education*, pp. 286–288, Macmillan, 1923.

RUGG, H. AND HOCKETT, JOHN — *Objective Studies in Map Location*, pp. 6, 7 and Chapter 7, Teachers College, 1925.

THORNDIKE, E. L. — *The Psychology of Arithmetic*, pp. 136–137, 167–168, Macmillan, 1922.

2. Several applications of the present step are explained in the following references which should be consulted if they are available :

Horn-Ashbaugh Speller, Preface, Lippincott, 1920.

JONES, W. F. — *The Jones Complete Course in Spelling*, pp. x–xii, Hall and M'cCreary, 1924.

OSBURN, W. J. — *Corrective Arithmetic*, Ch. 6, Houghton Mifflin, 1924.

RUGH, G. M., KNIGHT, F. B., AND STUDEBAKER, S. W. — *Arithmetic Workbook, Grade VI*, p. v., Scott, Foresman, 1925.

THORNDIKE, E. L. — *The Thorndike Arithmetics*, Preface, Rand, McNally, 1917.

3. Select one section of a course of study in your field. Select the elements which are fundamental and organize them into a review exercise. Give complete directions for carrying out the exercise with a class of pupils. Submit in writing. If possible, bring a typewritten copy for each member of the class.

FORTY-SIXTH MEETING

FORMULATING TESTS AND PRACTICE MATERIAL

The formulation of tests to be given at regular intervals to discover whether the objectives have been achieved has been pursued in an isolated way in connection with several of the subjects, but has been given very little attention in the systematic planning of curricula. The kind of tests and the kind of practice material that is designed to correct the deficiencies discovered by the tests modify the experiences of the pupil. For this reason, the curriculum maker is concerned.

Formulate tests to be given at regular intervals to discover whether the objectives have been achieved. If possible, prepare practice material to correct deficiencies discovered by the tests.

When the objectives of a course are stated clearly and specifically, it is possible to set up tests at intervals to determine whether the objectives have been achieved. If the objective is to acquire knowledge the test may consist of a few questions or problems.

In the attainment of a knowledge objective, there are always a few significant facts or ideas which the pupil should learn permanently, just as he learns his multiplication table. There is no reason why it should not be understood by the pupil just what the essential facts to be permanently retained are. It is a knowledge of these essential facts for which the student should be tested.

If the objective is to develop a skill, the test may consist of the performance of an operation or the completion of a task. For example, a course in household mechanics includes the objective, *to repair a leaky faucet.* The test here is to perform all the mechanical operations on a faucet which leaks. The learner should be placed before a leaky faucet and be required to repair it.

It should be clear that the purpose of these tests is not to grade the pupil, although this may be done incidentally by those who find it necessary. Primarily, these tests are a part of the learning procedure. They are designed to discover whether the pupil has attained the goals of instruction. If a test reveals that he has not attained a goal, he needs additional practice or corrective exercises. Ideally, the pupil should not continue with a new unit of the course until he has mastered what has gone before.

It is in no sense intended here that the curriculum maker shall introduce standard tests. Quite the contrary, the test should be original, based upon the particular objectives of a given course. Standard tests are not based on any particular course of study and therefore are usually not suited to test the pupil's achievement in any given course. The use of standard tests may have the effect of diverting instruction from the attainment of the carefully determined objectives of a course to preparing pupils to pass standard tests.

One's duty does not end with the formulation of tests of achievement. The instructional value of these tests is not complete unless one undertakes to correct the deficiencies revealed. When the pupil shows a deficiency it is possible to indicate simply what he needs to do to correct it. It may require nothing more than to refer the pupil to certain pages in a book. It may be necessary to put special practice material into the hands of the pupil. It may be necessary to give the pupil an instruction sheet for the performance of an activity. As a rule, corrective exercises should be designed with a view to individual use. Corrective work carried out simultaneously for a whole group is valuable only when the whole group has the same deficiency. This, however, is exceptional. Within reasonable limits this material can be carefully and systematically prepared in advance and made available for many teachers of the same subject in one community.

The tests and the remedial material may be written into the course of study. Of course, they would have to be separately printed for the pupil's use. It should be remembered that the course will be periodically revised to remove the mechanical effect of the tests and remedial material. There is no reason why the independent and intelligent teacher could not be encouraged to develop additional tests and corrective exercises.

Certain investigators have developed special techniques of administering tests. Curriculum makers who are at work on the preparation of tests should examine their works. The particular virtues of the new tests are the ease of scoring them and their objectivity, or freedom from personal bias. However, one can devise many ingenious tests without going into the theory of test construction. To illustrate several types which we have found useful, we will take the fact *68° is a comfortable room temperature* and convert it into five type questions: (1) Completion type: — ——° *is a comfortable room temperature.* (2) True-false type: — *72° is a comfortable room temperature.* (The student indicates by T or F whether the statement is true or false.) (3) Single word answer: — *What is a comfortable room temperature?* (4) Multiple-choice: — *42° 64° 68° 76° is a comfortable room temperature.* (The student underlines the correct answer.) (5) Case type: — *A room has a temperature of 60°. Mother suggests that John build a fire in the grate. Is it necessary? What is a comfortable room temperature?*

Illustration of a Test as It Appears in a Course of Study[1]

The use of short interesting tests, such as the following, have proved valuable in this grade. Fifty of the exercises

[1] Wood, T. D. and Strang, R. — *A Tentative Course of Study in Health Education for Grades I to VI*, 1925, pp. 58–60.

dealing with food may be selected from the *Gates-Strang Health Knowledge Test*, given at the beginning and again at the end of the unit of instruction on food to measure achievement.

Exercise I

Review Questions on Vitamins and Calories

Draw a line under the one word or word group that makes the sentence true:

a. The best food to give us Vitamin A is — white bread, milk, beefsteak, candy.

b. Children need vitamins especially for flavoring the food, growth and health, red blood corpuscles, calories.

c. The best foods to give us Vitamin B are meats, cake and pie, fruits and vegetables, white rice, white bread, butter.

d. The best foods to give us Vitamin C are milk, olive oil, bread and butter, raw fruits and vegetables, meats.

(**Exercise II** is omitted because it is too long.)

Exercise III

a. What is the average number of calories needed for a child of your age for one day?

b. How many of these calories would you eat for breakfast?

c. Plan a good breakfast which furnishes this number of calories.

d. How many of the total calories would you eat for lunch?

e. Plan a good lunch which furnishes this number of calories.

f. Is this the amount you usually eat? Is it more, or less?

Exercise IV

If you think the children described below would need more calories than the average child, write "more"; if you think they would need less, write "less," on the line which tells about each.

a. An Eskimo child
b. A country child who worked on the farm before and after school
c. A child who stayed in to read after school
d. A child who lived in the Tropics
e. A child at camp
f. A child in bed due to a sprained ankle
g. A very tall, thin child
h. A short, fat child

Assignment

The subject of diagnostic tests and corrective or remedial teaching has received special treatment in the following references which the student should read. The student should read only what pertains to the present problem. The class discussion will be based on the questions given below.

Buswell, G. T. and J. L. — *Diagnostic Studies in Arithmetic*, University of Chicago Press, 1926.

Maryland State Board of Education — *Arithmetic: Suggestions for Testing and for Corrective Work;* Maryland School Bulletin, Vol. IV, No. 5, October, 1922.

National Society for the Study of Education — "Report of the National Committee on Reading"; *Twenty-fourth Yearbook*, Ch. 10.

Monroe, W. S. — *Measuring the Results of Teaching*, Houghton Mifflin, 1918.

Osburn, W. S. — *Corrective Arithmetic*, Ch. 4, Houghton Mifflin, 1924.

Paulu, W. M. — *Diagnostic Testing and Remedial Teaching*, Heath, 1924.

St. Cloud, Minnesota, Board of Education — *Reading in the St. Cloud Public Schools, Grades I to VI*, 1924.

Questions for Discussion

Why is the formulation of tests and the preparation of corrective material within the scope of the work of the curriculum maker?

What is the purpose of tests?

What is the purpose of corrective material?

What does the test consist of when we wish to discover whether facts have been learned?

What is the nature of the test when we wish to discover whether a skill has been developed?

Should standard tests be used as a means of determining whether a goal has been achieved?

Justify the assertion that a test is a part of the learning material.

What are some possible forms of corrective material?

Under what circumstances may corrective material be prepared for a whole group?

Should tests and corrective materials be written into the course of study?

FORTY-SEVENTH MEETING

PRACTICE IN FORMULATING TESTS

Design a test covering the essentials for a given period (a week, a month, a unit of the course) in your particular subject. Remember that it should reveal whether the objectives have been achieved. Design corrective material for each item in the test. The corrective material should show exactly what the pupil should do in order to correct the deficiency involved in the failure to carry out any item.

The class discussion will consist of a criticism of the proposed tests and corrective exercises. If possible, bring enough typewritten copies of your material for all the members of the class. The class meeting will reproduce the conditions of a curriculum committee, as far as possible.

For the student who wishes assistance in the planning of tests, the following references may be helpful:

Ruch, G. M. — *Improvement of the Written Examination*, Scott, Foresman, 1924.

Miller, G. F. — *Objective Tests in High School Subjects*, published by the author at Norman, Oklahoma, 1926.

Russell, C. — *Classroom Tests*, Ginn, 1926.

Paterson, D. S. — *Preparation and Use of New Type Examinations*, World Book Company, 1925.

Greene, C. E. — *New Type Tests*, Denver, Colorado, Public Schools, 1926.

FORTY-EIGHTH MEETING

ADAPTING THE CURRICULUM TO INDIVIDUAL DIFFERENCES

Whereas we have made considerable progress in adapting instruction to individual differences, we have not yet discovered the best way of introducing the results into the printed course of study. Again we are concerned with a procedure which modifies the school experiences for different individuals or groups of individuals, thereby making it an important factor in curriculum making. Not enough has been actually accomplished along this line to merit special comment. In the next few years, we shall witness the systematic introduction of this element into the technique of curriculum making.

Make any adaptation of the course of study to your local method of handling individual differences.

There are several methods of adapting the curriculum to individual differences. Some would affect the school program radically. Individual instruction, for example, would for a large part of the school day, involve independent study and usually with verbal materials which have to be prepared in advance. The resulting experiences are unique. In such a curriculum the instruction sheet and the test play an important rôle.

An adaptation of the curriculum to ability groups again involves planning of experiences or activities which are at least partially different for the several groups. Just how they shall differ for the groups is a matter of deep controversy at the present time. Whether the brighter groups shall do more of the same work, whether they shall do entirely different work, and so on are matters upon which a curriculum-making group must make a decision.

The issue on which agreement must be obtained is whether the differences among individuals require radically diverse instructional material. The fundamental needs of all persons are the same and demand a fairly common body of instruction. For the lower levels of ability more time must be allowed for the mastery of the basic achievements. It is not enough merely to give backward pupils more handwork. The planning of simple experiences for the slow pupils involving easy mental and physical tasks should have for its purpose the achievement of the useful fundamental abilities which all persons need to master. The differences in curricula for different levels of ability should be quantitative and qualitative. The more capable persons should learn more in a more advanced way. The less capable should be given less to do and that should be presented in a more simple way.

When a class is divided into two or more groups for special instruction, as in reading or spelling, it is important to remember that the experiences of the pupils who are not working with the teacher must be as carefully considered as those of the group which is receiving direct instruction. A curriculum which anticipates this arrangement cannot escape planning activities for all the children in the class.

For any curriculum-making group the problem here is to determine exactly how the school activities ought to be planned in view of the fact that individuals differ in ability. The teacher may be advised to make adaptations in organization, instructional material, testing material, and administration of remedial material. In any case, the printed curriculum is for the purpose of guidance in this matter.

Assignment

For a clear understanding of the present step, it will be necessary, first, to become familiar with the nature of the problem of adapting the curriculum to individual differences; second, to become familiar with the proposed methods of handling this problem; third, to select one of these methods; fourth, to indicate what modifications in the curriculum are involved. The student will, therefore, be obliged to read one reference under each of the following headings given in the reading list: first, *the nature of the problem of adapting the curriculum to individual differences;* second, *the methods of adapting instruction to individual differences;* third, *the illustrations of adaptation of the curriculum to individual differences by subjects.* The report of the third reading should be submitted in writing. The class discussion will be concerned with the nature of the problem of adapting the curriculum to individual differences, the methods of adapting the curriculum to individual differences, and resulting changes in the curriculum.

Questions for Discussion

Why is the curriculum maker interested in the effect of individual differences on the school program?

What are the outstanding methods of adapting the curriculum to individual differences? What are their merits? Their limitations?

Does the adaptation of the curriculum to individual differences involve radically different programs of work for different individuals?

Does the adaptation of the curriculum to individual differences involve a modification of objectives? Of activities? Which are affected to a greater degree?

What modifications in the curriculum are involved in ability grouping?

Readings

I. Nature of the problem of adapting the curriculum to individual differences

Baker, H. J. — *Characteristic Differences in Bright and Dull Pupils*, Public School Publishing Co., 1927.

Chase, S. E. — "Provide for Individual Differences"; *Journal of Education*, April 24, 1924, pp. 464–465.

Eastman, Grace — "Finding and Helping to Overcome Individual Difficulties"; *Kansas Teacher*, March, 1924, pp. 7–8.

Irwin, E. A. and Marks, L. A. — *Fitting the School to the Child; an Experiment in Public Education*, Macmillan, 1924.

Johnston, C. H. — "What Is Curriculum Differentiation?" *Educational Administration and Supervision*, January, 1916, pp. 49–57.

Mayberry, L. W. — "Individualizing Problems for Pupils"; *Elementary School Journal*, October, 1917, pp. 133–137.

Parker, S. C. — "Adapting Instruction to Differences in Capacity"; *Elementary School Journal*, September, 1924, pp. 20–30.

II. METHODS OF ADAPTING THE CURRICULUM TO INDIVIDUAL DIFFERENCES

BAGLEY, W. C. AND KEITH, J. A. H. — "Adapting Materials to Individual Capacities"; in their *Introduction to Teaching*, pp. 180–209, Macmillan, 1924.

BALCH, G. D. — "Individual Work"; *Journal of Rural Education*, November, 1923, pp. 129–132.

BOWMAN, E. C. — "A Plan for Dealing with Individual Differences"; *West Virginia School Journal*, September, 1924, pp. 22–32.

COUNTS, G. S. — *The Senior High School Curriculum*, pp. 26–29, University of Chicago Press, 1926.

COURTS, B. M. — "The Adaptation of Subject Matter and Instructional Methods to Grammar-Grade Groups of Varying Ability"; *Elementary School Journal*, June, 1924, pp. 773–779.

DEPARTMENT OF SUPERINTENDENCE — "Research in Constructing the Elementary School Curriculum"; *Third Yearbook*, pp. 18–25, 192–200.

FARNHAM, C. E. — "Supervised Study"; *Education*, November, 1919, pp. 171–176.

FRANCIS W. PARKER SCHOOL — *The Individual and the Curriculum; Yearbook*, Vol. VI, 1920.

HALL-QUEST, A. L. — "Supervised Study as a Preparation for Citizenship"; *Journal of Education*, January 1, 1920, pp. 3–6.

HAMAIDE, AMELIE — "The Decroly Method"; *Progressive Education*, April, 1924, pp. 29–32.

HERRIOTT, M. E. — *Modifying Technique of Instruction for Gifted Children;* University of Illinois, Educational Research Circular, No. 41, 1926. Contains a bibliography.

JOHNSON, M. H. — *Modifications of the Curriculum That Have Been Tried;* Bulletin of the New York Society for the Experimental Study of Education, Vol. IV, February, 1923, p. 3.

KELLER, P. G. W. — "Rebuilding a Course of Study"; *School Review*, January, 1924, pp. 49–52.

LIMA, AGNES DE. — "The Dalton Plan"; *New Republic*, February 13, 1924, pp. 308–309.

MINOR, RUBY — "Supervised Study in the Elementary School"; *School and Home Education*, March, 1920, pp. 168–170.

NATIONAL SOCIETY FOR THE STUDY OF EDUCATION — "Adapting the Schools to Individual Differences"; *Twenty-fourth Yearbook*, Pt. II. Contains an annotated bibliography.

O'DELL, C. W. — *Provisions for the Individual Differences of High School Pupils;* University of Illinois Bulletin, Vol. XXI, 1923, No. 4.

PARKHURST, HELEN — "The Dalton Laboratory Plan"; *Progressive Education*, April, 1924, pp. 14–18.

STRUTHERS, A. B. — "Some Adjustments to Varying Needs of Pupils in Junior High School Administration"; In California High School Teachers' Association, Committee of Fifteen, *Report on Secondary Education in California*, pp. 128–176, The Association, 1923.

WASHBURNE, C. W. — "The Winnetka System"; *Progressive Education*, April, 1924, pp. 11–13.

III. ILLUSTRATIONS OF ADAPTING THE CURRICULUM TO INDIVIDUAL DIFFERENCES (BY SUBJECTS)

LANGUAGE

CHAMBERLAIN, ESSIE — "Differences in Ability which Demand Changes in Subject-Matter and Method"; *English Journal*, November, 1924, p. 629.

COXE, W. W. AND RICHARDS, E. B. — *Suggestions for Teaching Silent Reading*, University of the State of New York Bulletin, No. 803, May 1, 1924, The University of the State of New York Press, 1924.

MATHEWS, M. E. — "Grouping Pupils in English According to Ability"; *Tenth Annual Schoolmen's Week Proceedings*, University of Pennsylvania Bulletin, Vol. XXIII, June 9, 1923, No. 38, The Press of the University of Pennsylvania, 1923, pp. 291–296.

MITCHELL, H. — "Supervised Study in Modern Languages"; *Education*, January, 1918, pp. 385–387.

RICHARDS, A. A. — "Spelling and the Individual System"; *School and Society*, November 29, 1919, pp. 647–650.

ROHN, R. W. AND BRIGGS, T. H. — "Intelligence and Literature"; *School and Society*, October 27, 1923, pp. 508–510.

SUTHERLAND, A. H. — "Correcting School Disabilities in Reading" *Elementary School Journal*, September, 1922, pp. 37–42.

THEISEN, W. W. — "Provisions for Individual Differences in the Teaching of Reading"; *Journal of Educational Research*, September, 1920, pp. 560–571.

UNIVERSITY OF CHICAGO HIGH SCHOOL — "Differentiating Instruction in Ninth-Grade English"; *School Review*, December, 1919, pp. 772–788.

WASHBURNE, C. W. — *Individual Speller and Teacher's Manual*, World Book Co., 1924.

MATHEMATICS

ALEXANDER, MARIE — "Individualized Instruction in Third-Grade Number"; *Virginia Journal of Education*, October, 1924, pp. 49–50.

BRESLICH, E. R. — "Supervised Study in Mathematics"; *School Review*, December, 1923, pp. 733–747.

BUCKINGHAM, B. R. — "Individualizing Instruction on the Basis of Testing, with Special Reference to Arithmetic"; *Proceedings of Second Annual Conference on Educational Research and Guidance*, San Jose State Teachers College Bulletin, California State Printing Office, 1923, pp. 16–32.

MUSIC

DEPARTMENT OF SUPERINTENDENCE — "The Junior High School Curriculum"; *Fifth Yearbook*, pp. 329–332.

MORRISON, H. C. — "Reconstructed Mathematics in the High School. The adaptation of instruction to the needs, interests, and capacities of students"; *Thirteenth Yearbook of the National Society for the Study of Education*, Pt. I, pp. 31.

SCHORLING, R. — "The Problem of Individual Differences in the Teaching of Secondary School Mathematics"; *School Review*, October and December, 1915, pp. 535–549, 649–664.

SMITH, J. H. — "Individual Variations in Arithmetic"; *Elementary School Journal*, November, 1916, pp. 195–200.

WASHBURNE, C. W. — *Individual Arithmetics*, World Book Co. (In press.)

PRACTICAL ARTS

OMANS, A. C. — "Enriched Manual Arts Course for the Gifted Child"; *Detroit Journal of Education*, December, 1922, pp. 170–173.

SCIENCE

BEAUCHAMP, W. L. — "Supervised Study in Elementary Physical Science"; *School Review*, March, 1924, pp. 175–181.

PIEPER, C. J. — "Supervised Study in Natural Science"; *School Review*, February, 1924, pp. 122–133.

SOCIAL STUDIES

BIGELOW, L. E. — "Individual Assignments in Geography"; *Elementary School Journal*, January, 1909, pp. 250–256.

PIERCE, B. L. — "An Experiment in Individual Instruction in History"; *Historical Outlook*, February, 1919, pp. 86–87.

WASHBURNE, C. W. — "The Winnetka Fact-Course in Social Science"; *Historical Outlook*, November, 1924, p. 362.

FORTY-NINTH MEETING

PRACTICE IN ADAPTING THE CURRICULUM TO INDIVIDUAL DIFFERENCES

As a preparation for practical exercises in adapting the curriculum to individual differences, the student has familiarized himself with the major issues involved in the problem and the several proposed ways of solving the problem. He has selected for himself a method of adapting the curriculum to individual differences and has determined what modifications it will be necessary to make.

Select any section of a course of study. Describe briefly the method of adapting the curriculum to individual differences which you intend to use. Proceed to alter the selected section of the course of study to conform to your plan. The report should be submitted in writing but the oral report in class should be delivered without any extensive use of notes. The class discussion will consist of comments upon the proposed changes in the course of study to adapt it to individual or group differences.

FIFTIETH MEETING

EDITING THE COURSE OF STUDY

Have one person or group of persons edit the whole course of study in order to remove inconsistencies and evidences of a patchwork process.

As a rule, courses of study published by public school systems are not satisfactorily edited. One gets the impression that they are prepared by persons without publishing experience and printed by commercial printers whose duty is over when the copy appears in type. They lack the care and attention which is given by reputable publishers to a manuscript. Numerous inconsistencies, inaccuracies, and other weaknesses, such as lack of clarity, get into the printed work. The result, in a very large percentage of the cases, is that valuable work is issued in inexcusably bad shape and consequently fails to get the attention it deserves.

In a certain course in social studies the headings which appear most frequently are Stimulation and Procedure. But there are frequent variations from these headings. There is confusion in the reader's mind as to the proper procedure. The following are the outlines of headings of some units:

(1) Procedure, Expression; (2) Stimulation, Expression; (3) Stimulation, Procedure, Other Expression; (4) Stimulation, Expression, Other Expression, Nature Experiences, Expression, Holidays, Songs.

A certain course of study in geography merely gives several general objectives for Grade III. For Grades IV, V, and VI, in addition to the general objectives for each grade, the specific objectives are given before each teaching unit. There appears to be no good reason why Grade III should not follow the same procedure as the other grades. The inconsistency is probably due to the difference between the plan of approach used for Grade III and that used for the other grades.

A course of study in elementary science is organized under the following headings: (1) Topic; (2) Activity; (3) Literature for Children; (4) Teachers' References. However, as one turns the pages a number of additional headings such as Problems, Questions, Possible Observations, Possible Projects, Purposes crop out sporadically. It is very likely that the occasional material under a new heading which is introduced is valuable; but why not introduce it generally?

As an illustration of the marked differences in the quality of parts of the same course of study, there are two successive units in a certain elementary course of study in health. The first unit is concerned with the cultivation of energy and vitality. A complete teaching outline is given for this unit. It is followed by a list of standards of attainment. Then follows a full discussion of the class activities, of the importance of energy and vitality, of some of the ideas involved in the subject, all of which is accompanied by four full-page illustrative diagrams. At the end of the unit appears a bibliography. The next unit, which is concerned with the right use of leisure, does not receive so much attention. There are no teaching outlines, no standards of

attainment, and no bibliography. There is merely a short discussion of a balanced day's program accompanied by two diagrams.

Frequently references and bibliographies are given in different forms by different members of the revision committee. To avoid this the committee should have, in advance, the forms of the book and periodical references. The following is suggested:

(1) Book Reference:

CHARTERS, W. W. — *Curriculum Construction*, pp. 34–36, Macmillan, 1923.

(2) Periodical Reference:

SNEDDEN, D. — "Planning Curriculum Research"; *School and Society*, September 12, 1925, pp. 319–332.

(3) Bulletin Reference:

MONROE, W. S. — *Making a Course of Study;* University of Illinois, Bulletin, Vol. XXIII, No. 2, September 19, 1925 (Educational Circular No. 35), pp. 18–35.

The introduction of the course of study should include a brief statement of the procedure followed in its construction. This enables the reader to judge its value more intelligently. There are a good many, long introductory statements which are written after the course of study is complete and which do not exactly govern its contents. It is necessary to include only such material as actually affects the course of study. Protracted discussions of theory are not read or applied. It is wiser to develop the applications in the body of the course of study.

Public school courses of study are generally difficult to read. The manuscript is carelessly and crudely prepared by teachers who set down their ideas without taking pains with clearness and style. Frequently the material is published as it was thrown together in fragmentary outline.

Curricula are printed in small type and they are improperly spaced between lines — that is, there is a poor distribution of white and black space. Headings appear all over the page, center headings and marginal headings being interchanged without discrimination or consistency. On one page the text may be partly indented and then brought to the margin without reason. There is no uniformity in size of type used for text, bibliography, headings, and subheadings. A rule should be determined and the manuscript marked consistently in accordance with that rule.

Such poor typography must be corrected either by the printing establishment or in the office of the public school system. If the firm to which the printing contract is given is poor or inadequately staffed, the complete preparation of the manuscript for the press must be carried on in the office of school headquarters. In the larger school systems there is a department of publications with a staff of several persons specially trained to edit copy. In the small school systems it will be necessary for the responsible persons to refer to the several manuals of style, which are listed below, while they are engaged in preparing a course of study for the press. The size of the page, the size of type, the type face, the arrangement of headings, size of type used for text, headings, and subheadings, punctuation, capitalization, etc., are discussed in these manuals.

The teacher's reading habits are the same as those of an ordinary person. Most of her reading is solid matter in paragraphs with occasional center headings and bold face paragraph headings. The person who prepares the course of study for the press should take special pains to make it attractive and easy to read.

The aim should be to make the finished printing so attractive, or, rather, so unobtrusively correct from the mechanical viewpoint, that the attention of the reader

will not be diverted from what the author has to say. In this respect, the following should be noted:

The printer should not be allowed to suggest cheap paper that will make for inferior printing and difficult reading. Such economy is expensive. The size of type should not be left to the choice of the printer, who may be governed by price rather than comfort to the reader.

When the first proof is finished, it should be read carefully for misspellings. Broken letters or lines that are out of alignment or that print poorly should be marked for the proper corrections. Long quotations are generally set up in finer type, and one should see that this is consistently done. In the use of different sizes of type for headings, one rule should be followed: if the main headings are to be in large capitals, all main headings must be in that size lettering and all subheadings must be in smaller type. The paging should not appear crowded: the lines should be well and evenly spaced; the margin should be at least a half inch wide.

It is the function of the editor to make the printed whole as nearly correct, factually and grammatically, and as clear in English expression as possible. An important point to remember is that editing should be done by one not originally identified with the writing of the work. Thus the editor will represent the viewpoint of the prospective reader.

When an unqualified statement occurs which is likely to be questioned, a reference should be given to prove the point; or, if the statement was included under the mistaken belief that it was a fact, the editor's duty is to call the attention of the author to the error. Again, the editor must watch for lack of clarity: an author who is an authority in his field may omit a point — to him, an obvious step but to the average reader a destructive gap; or the lack of clarity may be due to poor sentence structure or incorrect punctua-

tion, which may be easily corrected in the proof, such corrections adding much to the value of the composition. Finally, in the case of collaboration, two authors may seem to contradict each other, in which case a common ground must be found; or there may be cross-references which will need to be checked.

Assignment

1. Examine several courses of study and be prepared to answer the following questions concerning each. If possible bring to the class the courses of study which you are criticizing.

Are there unwarranted differences in the form of the teaching unit?

Are there differences in terms which cause confusion?

Are there differences in the way references are given?

Are there obvious differences in the strength of the several parts of the course of study?

Are there differences in completeness of the parts of the course of study?

Are there obvious inconsistencies in headings, indentations, and other physical qualities of the printed course of study?

2. Select a course of study which you can deface and proceed to edit a section of it to meet your requirements. The entire assignment should be submitted in writing.

References

Halsey, F. D. — *A Handbook of Style*, Princeton University Press, 1925.

McCracken, H. N. and Sandison, H. E. — *Manual of Good English*, Ch. 8, Macmillan, 1918.

Manly, J. M. and Rickert, E. — *The Writing of English*, Appendix, Holt, 1919.

Peerenboom, C. A. — *Typographical Tips*, Collegiate Press, 1922.

University of Chicago Press — *A Manual of Style*, 1925.

FIFTY-FIRST MEETING

REVISING GRADE PLACEMENT ON THE BASIS OF EXPERIENCE

Revise the placement of teaching units on the basis of experience.

The first placement of activities by grades is tentative, and is made by an intelligent and experienced teacher. Later placement should be the result of careful experimentation and study of the results of the preliminary grade placement. The problem here is to discover (1) the place at which an activity is most interesting, (2) the place where it is most useful, and (3) the place at which the child is most capable of performing the activity. Some work along this line has been done, but here, too, we are in the early stages of the development of this aspect of the technique of curriculum making.

The *Cleveland Course of Study in Elementary Science* furnishes an illustration of the present step. Two questions were put to all the teachers using the new course of study. (1) Which teaching units are inappropriate to the grade? (2) What units should be added? As a result of this study they concluded that for the first grade a study of stones and the dipper should be eliminated and that a study of the sparrow, rocking-chair, see-saw, swing, and colors should be added. For the second grade, a study of twigs, the night hawk, and purple grackle were eliminated, while a study of the weather vane, tea kettle, shells, pigeon, pussy-willow, horse, and cocoon were added. Other changes were made for Grades III, IV, V, and VI.

The subjoined references will show that most of the work in grade placement has been done in the field of reading where the aim was to discover the age or grade in which certain selections interested children the most. In the field

of arithmetic, there are a few studies to determine in what grade certain arithmetical operations are most difficult.

It has obviously been impossible to carry on much experimentation in grade placement as an integral part of the movement in curriculum making, because of its newness. However, we cannot escape the responsibility of determining exactly where a given activity is most interesting, and most useful.

Assignment

Because it takes a specially long time to carry on a practical exercise in grade placement, we shall have to content ourselves with the reading of the available literature in this field and with a discussion based upon it. The student should read at least one of the references below and submit a report in writing.

Questions for Discussion

How is the first placement of activities made?

Why should this be a tentative grade placement?

Upon what factors should grade placement depend?

Can you account for the fact that the present available grade placement studies are limited chiefly to reading and arithmetic?

Readings

HANDWRITING

Kirk, J. G. — "Handwriting Survey to Determine Grade Standards"; *Journal of Educational Research,* March, 1926, pp. 181–188; April, 1926, pp. 259–272.

LANGUAGE

Dyer, C. A. — "The Placement of Poems in the Grades," in Bobbitt, F. — *Curriculum Investigations*, Ch. 15. Grade

placement based upon practices in 150 courses of study, 26 series of elementary school readers, and recommendations contained in 201 books on the teaching of English.

GUILER, W. S. — "Analysis of Children's Writings as a Basis for Instruction in English"; *Journal of the Ohio State Teachers Association*, December, 1925, p. 15.

KYTE, G. C. — "Calibrating Reading Material"; *Elementary School Journal*, March, 1925, pp. 533–546.

MCPHEE, CLARE — "The Teaching of Language Forms"; *Elementary School Journal*, October, 1925, p. 137. Illustrates a method of grading the teaching of correct language forms. The whole school is tested on all the errors. Each grade studies those errors which occur most commonly.

UHL, W. L. — *Scientific Determination of the Content of the Elementary School Course in Reading*, University of Wisconsin Studies in the Social Sciences and History, Number 4.

WASHBURNE, C. — "A Grade Placement Curriculum Investigation"; *Journal of Educational Research*, April, 1926, pp. 284–292.

—— AND VOGEL, M. — "What Books Fit What Children"; *School and Society*, January 2, 1926, p. 22.

MATHEMATICS

BUSH, M. G. — "The Fundamental Number Facts"; *School and Society*, September 1, 1917, pp. 265–268. Determines the relative difficulty of combinations by tests.

HEILMAN, J. D., AND SHULTIS, F. W. — *A Study in Addition;* Colorado State Teachers College, Research Bulletin, 1916, No. I. (Also in Department of Superintendence — *Third Yearbook*, pp. 103–104.) Order of difficulty of arithmetic combinations.

HOLLOWAY, H. V. — *An Experimental Study to Determine the Relative Difficulty of the Elementary Number Combinations in Addition and Multiplication*, University of Pennsylvania, 1914. (Also in Department of Superintendence — *Third Yearbook*, pp. 103–104.)

SOCIAL STUDIES

MATHEWS, C. O. — *The Grade Placement of Curriculum Materials in the Social Studies;* Teachers College, 1926.

SCIENCE

WEBB, H. A. — *General Science Instruction in the Grades,* pp. 41–105, George Peabody College for Teachers, 1921. (Also in Curtis, F. D. — *Investigations in the Teaching of Science,* pp. 187–197).

PART IX

REVIEW AND CRITIQUE

FIFTY-SECOND MEETING

REVIEW OF THE CHIEF STEPS IN CURRICULUM MAKING

We have just completed all the steps in the process of curriculum construction as set forth in this course. In the main, the procedure proposed here is like the procedure proposed by other curriculum makers. This ought to give some assurance to the student that the procedure proposed in this course is not visionary or eccentric. However, the student may wish to consider certain alternative plans of curriculum making. Or he may find certain steps proposed by others more satisfactory to him than those proposed here. For this purpose we present in outline form brief statements of several plans of curriculum making. If possible, the plan should be studied in the original publication. Compare these plans with the one proposed in this course. It may be a convenience in making the comparison to write comments in the margin as you read.

The Chief Steps in This Course

DETERMINING OBJECTIVES

1. Determine the composition of the curriculum committee.
2. Settle on a definition of the aim of education and the meaning of the curriculum.
3. Lay down a few fundamental principles showing your position on important issues in curriculum making.
4. Select a major field of life or a present formal subject.
5. Lay down a few fundamental principles showing your position on the most important issues in your field.

6. Determine the meaning of an objective and get some agreement as to its form.
7. Proceed to determine the objectives of education in your particular field of inquiry.
8. Determine the main headings under which the objectives fall and place the latter under their appropriate headings.
9. Eliminate certain objectives in accordance with criteria of relative importance, relative interest, and relative difficulty.
10. Designate the appropriate grade and subject into which each objective falls.

DETERMINING ACTIVITIES

11. Determine exactly what you mean by a school activity.
12. Examine critically some previously prepared teaching units and determine the essential qualities of a good teaching unit.
13. Determine the main headings which will form the outline of most of your teaching units.
14. Proceed to compose instruction units, one at a time, in a form for publication.
15. Select the elements which are fundamental and repeat them at appropriate intervals in order to assure permanence of learning.
16. Formulate tests to be given at regular intervals to discover whether the objectives have been achieved. If possible, prepare practice material to correct deficiencies discovered by the tests.
17. Make any adaptation of the course of study to your local method of handling individual differences.
18. Have one person or group of persons edit the whole course of study in order to remove inconsistencies and evidences of a patchwork process.

19. Revise the placement of units in grades on the basis of experience.
20. Continue to revise the course of study in accordance with any new developments.

A Plan Proposed by W. W. Charters[1]

1. Determine the major objectives by a study of the life of man.
2. Analyze these objectives into ideals and activities and continue the analysis to the level of working units.
3. Arrange them in order of importance.
4. Raise to high importance those that are high in value for children but low in value for adults.
5. Deduct those better learned out of school. Determine the number of the most important items which can be handled within the allotted time.
6. Collect the best practices of the race in handling these ideals and activities.
7. Arrange the material so obtained in proper instructional order according to the psychological nature of children.

A Plan Proposed by A. S. Barr[2]

1. Select from the major fields of human activities one or more divisions for study and analysis.
2. Determine educational objectives by social analysis.
3. Analyze the individual for those mental characteristics, abilities, and interests that characterize human behavior.
4. Determine those universal personal qualities (ideals) that should characterize man's activities.
5. Study the activities of child life.

[1] Charters, W. W. — *Curriculum Construction*, p. 102, Macmillan, 1923.
[2] Barr, A. S. — "Making a Course of Study"; *Journal of Educational Method*, May and June, 1924.

6. List the objectives as discovered in the analysis of items 3, 4, and 5.
7. Formulate guiding principles.
8. Select, from the entire range of abilities, those to be developed in school.
9. Select the activities to be used in the attainment of objectives.
10. Select and standardize the needed materials, supplies, equipment, etc., essential to the course of study.
11. Place the curriculum materials in their appropriate grades.
12. Organize the experiences into correlated instructional units.
13. Formulate a proper method of teaching each unit.
14. Determine standards of attainment for each grade.
15. Introduce the various mechanical devices essential to the course of study.
16. Revise the course of study constantly in the light of experience and experimentation.

A Plan Proposed by W. C. Bagley [1]

1. Make an analysis of courses of study, textbooks, experiments, and theories to determine prevailing objectives, content, method, and materials.
2. Make an analysis of current lay and professional criticisms.
3. Make an analysis of social needs as shown by social forethinkers, activity analyses, social statistics.
4. Refine these according to a postulation of the general aim of education.
5. State the specific purposes, objectives, and principles which result from the analyses.
6. Formulate a core curriculum.
7. Formulate a type curriculum.

[1] From a mimeographed diagram prepared for the California State Department of Education and furnished by Dr. George C. Kyte.

8. Validate the curricula by comparing their educational effect with the goal for which they were designed.
9. Revise the curriculum.
10. Formulate a set of principles, treating of the method of curriculum construction.

A Plan Proposed by M. E. Herriott[1]

1. Formulate an introductory statement giving your point of view on the purpose of the course of study.
2. Formulate the general objectives of the course of study.
3. Determine the time per week to be allotted to the subject in each grade.
4. Arrange the major topics of the course in sequence by grades.
5. Formulate specific objectives from
   (1) arithmetic textbooks;
   (2) books on methods of teaching arithmetic;
   (3) numerous courses of study;
   (4) standardized tests in arithmetic;
   (5) special studies such as Wilson's.
6. Proceed to select a final list of specific objectives.
7. Arrange the specific objectives in proper order by topics and grades.
8. Make a final organization of topics.
9. Modify the specific objectives and topics to provide for individual differences.
10. Formulate appropriate learning exercises to achieve the objectives set up.
11. Formulate methods of instruction for particular grades and with particular subject matter.

Assignment

You will compare the above plans with the plan proposed in this course, making comments in the margin. If possible,

[1] Herriott, M. E. — *How to Make a Course of Study in Arithmetic;* University of Illinois, Educational Research Circular No. 37.

you will read each of the plans in its original presentation. In this way you will, very likely, have answered the questions which follow. If not, they should be taken up now and answered in writing.

1. Which plans do not provide for the determination of objectives as the first step? Which do?
2. Which plans propose one specific method of determining objectives? Which propose several?
3. What is the nature of the teaching unit as revealed by each plan?
4. What is your criticism of any of the plans, including the one proposed in this course?
5. What are the chief points of agreement among the several plans?

FIFTY-THIRD MEETING

ANALYSIS OF SOME GOOD COURSES OF STUDY

The purpose of this meeting is to evaluate some good courses of study. A curriculum maker ought to be able to inspect a course of study and on the basis of several outstanding criteria to render an opinion as to its value. A more careful evaluation would require a thorough analysis on the basis of a complete set of weighted criteria. For our present purpose, however, we shall suggest a set of criteria without assigning a special value to each. The process will be described in the assignment.

The list of courses of study given below from which the student is to choose was prepared by the Bureau of Curriculum Research of Teachers College. The Bureau made a study of good courses of study in public and private schools in the United States to discover which were the best. This

list of the elementary courses of study were selected by a rigorous procedure from a total of nine thousand courses examined.[1] The lists for the junior and senior high school courses of study are not yet ready for publication.

Elementary Courses of Study

Arithmetic

Course Issued By	*Title of Course*	*Date*	*Grades Included*
* Baltimore, Md.	Arithmetic Course of Study for Baltimore City	1924	K–6
* Baltimore, Md.	Revised County Course †		1–7
Cincinnati, Ohio....	Tentative Outline of Number Work for Primary Grades	1924	1–3
Columbus, Ohio....	Course of Study in Primary Arithmetic	1923	1–3
* Denver, Colo.	Course of Study Monograph, No. 4 — Arithmetic	1924	1–6
Des Moines, Iowa..	Arithmetic Course of Study	1920	1–8
* Detroit, Mich.	Course of Study in Arithmetic	1924	2–8
Fort Smith, Ark. ..	Course of Study in Arithmetic	1924–1925	1–7
Indiana State.....	Manual with Course of Study in Arithmetic	1924	1–8
Long Beach, Calif. .	Arithmetic and Projects	1924	K–3
* Los Angeles, Calif. .	Course of Study	1924–1925	K–6
* Maryland State....	Suggestions for Testing and Corrective Work		
Miami, Ariz.	Course of Study		K–6
* Montana State.....	State Course of Study for City Elementary Schools	1924	1–8
San Francisco, Calif.	Kindergarten-Primary Course of Study	1924	K–3

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

† This course consists of a mimeographed bulletin of 55 pages, and a chart called "A working basis for a revision of the course of study in arithmetic."

[1] The list is printed with permission of the Bureau of Curriculum Research of Teachers College.

ART

Course Issued By	*Title of Course*	*Date*	*Grades Included*
* Cleveland Heights, Ohio	Courses in Art, Drawing, and Art Appreciation	1921–1922	K–6
Harrisburg, Pa.	Outline of Course of Study in Art for the Harrisburg Public Schools	1922	1–HS
Indianapolis, Ind.	Art Instruction Course of Study for Elementary Schools	1922	1–8
Kalamazoo, Mich.	Course of Study — Book V — Art, Industrial Arts, Household Arts, Manual Training, and Vocational Studies	1921	2–HS
* Lansing, Mich.	Course of Study in Fine Arts for the Lansing Public Schools	1922	1–12
* Long Beach, Calif.	Course of Study in Art	1923	1–9
* Los Angeles, Calif.	Course of Study	1924–1925	K–6
Missouri State	Course of Study for the Elementary Schools	1923	1–8
* North Carolina State	State Course of Study for Elementary Schools	1923	1–8
Pennsylvania State	Manual and Syllabuses for Elementary Schools	1922	1–8
St. Cloud, Minn.	Fine and Industrial Arts	1924	1–6
San Francisco, Calif.	Kindergarten-Primary Course of Study	1924	K–3
* Spokane, Wash.	Course of Study — Art Department	1923	1–8

CIVICS

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Baltimore, Md.	Course of Study for Baltimore County Schools	1921	1–8
* Berkeley, Calif.	Course of Study Monographs No. 6, History and Civics	1922	K–6

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

CIVICS (*Continued*)

Course Issued by	*Title of Course*	*Date*	*Grades Included*
Connecticut State..	Normal School Course of Study in Ethics	1924	Normal
Denver, Colo.	Course of Study Monograph No. 1	1924	K'g'n
* Indianapolis, Ind. .	Course of Study in American Citizenship	1922	1–8
* Los Angeles, Calif. .	Course of Study	1924–1925	K–6
* Minnesota State....	Curriculum for Elementary Schools	1923	1–8
* North Carolina State	State Course of Study for Elementary Schools	1923	1–8
Pennsylvania State	Manual and Syllabuses for Elementary Schools	1922	1–8
Santa Barbara, Calif.	Course of Study in History and Civics	1921	1–8
Western Kentucky State Teachers College, Bowling Green, Ky.	Courses of Study for Primary and Intermediate Grades		1–6
Wisconsin State....	A Course of Study for the Elementary Schools	1923	1–8

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

GENERAL †

(*Under the head of "General" are included the ratings of courses as wholes rather than by separate subjects*)

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Baltimore, Md.	Course of Study for Baltimore County Schools	1921	1–8
Berkeley, Calif.	Course of Study Monograph No. 7 — Visual Instruction	1923	K–6
California State.....	Suggested State Course of Study for Kindergarten-Primary Grades	1922	K–3

† The courses are arranged alphabetically. All of the courses reported in this list were rated "Very Good" or above.

GENERAL † (*Continued*)

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Iowa State Teachers College, Cedar Falls, Iowa	Bulletin "Particular Phases of Instruction and Demonstration" (Volume XXIII, No. 4)	1922	
Cliffside, N. J.	Cliffside Curriculum Studies	1924–1925	K–2
Denver, Colo.	Course of Study Monograph No. 1, Kindergarten	1924	K'g'n
Elizabeth, N. J.	Outline Courses of Study for Kindergarten and Elementary Grades	1924–1925	K–6
Francis Parker School, Chicago, Ill.	Education through Concrete Experience		
Francis Parker School, Chicago, Ill.	Expression as a Means of Training Motive		1–12
Francis Parker School, Chicago, Ill.	The Course in History (Social Science Series)		1–12
Francis Parker School, Chicago, Ill.	The Individual and the Curriculum — Experiments in Adaptation		
Francis Parker School, Chicago, Ill.	The Morning Exercise as a Socializing Influence		1–12
Francis Parker School, Chicago, Ill.	The Course in Science (Social Science Series)		1–12
Francis Parker School, Chicago, Ill.	The Social Motive in School Work		
Los Angeles, Calif.	Course of Study	1924–1925	K–6
Minnesota State	Curriculum for Elementary Schools	1923	1–8
Montana State	State Course of Study for City Elementary Schools	1924	1–8
New York City, N. Y.	Syllabus for Kindergarten and Kindergarten Extension	1924	
Norfolk, Va.	Course of Study for Elementary Schools	1923	K–6
North Carolina State	Course of Study for Elementary Schools	1923	1–8
Okmulgee, Okla.	Course of Study and Project Plans	1922	1–6
Pennsylvania State	Manual and Syllabuses for Elementary Schools	1922	1–8

† The courses are arranged alphabetically. All of the courses reported in this list were rated "Very Good" or above.

GENERAL † (*Continued*)

Course Issued By	*Title of Course*	*Date*	*Grades Included*
San Francisco, Calif.	Kindergarten-Primary Course of Study for City and County Public Schools	1924	K–3
Speyer School (Teachers College, New York City)	The Speyer School Curriculum	1913	K–8
Virginia State	State Course of Study for Rural and Elementary Schools	1923	1–7
Western Kentucky State Teachers College, Bowling Green, Ky.	Course of Study for Primary and Intermediate Grades		1–6
West Hartford, Conn.	Course of Study Monograph No. 1	1924	1–6
Wisconsin State	Course of Study for Elementary Schools	1923	1–8

† The courses are arranged alphabetically. All of the courses in this list were rated "Very Good" or above.

GEOGRAPHY

Course Issued By	*Title of Course*	*Date*	*Grades Included*
* Baltimore, Md.	Geography, History, Arithmetic Course of Study for Baltimore City	1924	K–6
Baltimore, Md.	Course of Study for Baltimore County Schools	1921	1–8
Beaver Country Day School, Brookline, Mass.	Lower School Problems in a Progressive School		Elementary
Bridgeport, Conn.	Course of Study in Geography	1923	1–7
* California State	Suggested State Course of Study in Geography for the Elementary Schools	1924	4–6
Columbus, Neb.	Course of Study	1924	1–8
Decatur, Ill.	Geography	1921	3–6
Des Moines, Iowa	Course of Study in Geography	1922	K–7
East Cleveland, O.	Geography Course of Study Material		3–8

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

GEOGRAPHY (*Continued*)

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Ethical Culture School, New York City, N. Y.	Outline of Course of Study and Reports of Work Done	1924–1925	K–12
Francis Parker School, Chicago, Ill.	Catalogue and School Studies in Education		1–12
* Little Rock, Ark.	Teachers Manual, Method Book and Course of Study in Geography, History, Civics	1923	4–6
* Los Angeles, Calif.	Course of Study	1924–1925	3–6
Michigan State	Manual for County Normal Training Classes	1923	Normal
* Montana State	State Course of Study for City Elementary Schools	1924	1–8
* Okmulgee, Okla.	Course of Study and Project Plans	1922	4–6
Pennsylvania State	Manual and Syllabuses for Elementary Schools	1922	1–8
Pittsburgh, Pa.	Course of Study in Geography	1922	3–8
* Trenton, N. J.	Elementary Course of Study in Geography	1922	1–6
* Western Kentucky State Teachers College, Bowling Green, Ky.	Course of Study for Intermediate Grades		
West Hartford, Conn.	Course of Study Monographs No. 1	1924	4–6 1–6

HEALTH

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Cleveland Heights, Ohio	Course of Study in Health Education	1921	1
* Detroit, Mich.	Course of Study in Health Instruction for the Elementary Schools	1922	4–6
North Dakota State	Course of Study in Physiology and Hygiene for Elementary Schools of North Dakota	1922	1–8
Pennsylvania State	Course of Study in School Health	1923	1–8

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

HISTORY

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Baltimore, Md. ...	Course of Study for Baltimore County Schools	1921	1–8
* Berkeley, Calif. ...	Course of Study Monographs No. 6, History and Civics	1922	K–6
Des Moines, Iowa..	Course of Study in History and Civics	1922	K–8
Detroit, Mich.	Course of Study in Social Science	1923	1–6
* Los Angeles, Calif. .	Course of Study	1924–1925	K–6
Minnesota State....	Curriculum for Elementary Schools	1923	1–8
* North Carolina State.....	State Course of Study for Elementary Schools	1923	1–8
Okmulgee, Okla. ...	Course of Study and Project Plans	1922	1–6
Santa Barbara, Calif.....	Course of Study in History and Civics	1921	1–8

INDUSTRIAL ARTS

Course Issued By	*Title of Course*	*Date*	*Grades Included*
* Alabama State.....	Course of Study for Elementary Schools	1924	1–6
* Baltimore, Md.....	Course of Study for Baltimore County Schools	1921	1–8
* Bowling Green State Normal College, Bowling Green, O.	The Course of Study of the Elementary School, Volume V	1918	1–6
* Cuyahoga County, O.....	Course of Study and Manual of Instruction for the Public Schools of Cuyahoga County	1921	1–8
* Minnesota State....	Curriculum for Elementary Schools	1923	1–8
New York State....	A Handbook in Art and Industrial Arts for Elementary Teachers	1922	1–6

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

INDUSTRIAL ARTS (*Continued*)

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Passaic, N. J.	Courses of Study in History, Geography, Industrial Arts, English, School Festival, Arithmetic	1923	1–7
Richmond, Va.	Course of Study in Industrial Education and Drawing	1916	K–JrH
* St. Cloud, Minn. ..	Fine and Industrial Arts	1924	1–6
* Speyer School (Teachers College, New York City)..	The Speyer School Curriculum	1913	K–8

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

LANGUAGE AND GRAMMAR†

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Baltimore, Md.	Course of Study in English (Baltimore City, Maryland)	1924	4–6
Baltimore, Md.	Course of Study for Baltimore County Schools	1921	1–8
Boston, Mass.	Syllabuses for the Elementary Schools, School Documents, Nos. 8, 15, 16, 18	1923	2–3–5–6
Connecticut State....	A Course of Study in Oral and Written English	1924	1–6
Decatur, Ill.	English Course of Study		1–6
Des Moines, Iowa....	Course of Study in English	1922	K–6
State Normal School, Dillon, Mon.	Training School Course of Study in Language, Composition, Grammar, No. 18	1922	K–8
Eastern Illinois State Teachers College, Charleston, Ill. ...	Course of Study in English for the first Six Grades (Bulletin No. 74)	1921	1–6
Elizabeth, N. J.	Outline Courses of Study for Kindergarten and Elementary Grades	1924–1925	K–6

† The courses are arranged alphabetically. All of the courses reported in this list were rated "Very Good" or above.

LANGUAGE AND GRAMMAR (*Continued*) †

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Fort Smith, Ark.	Course of Study in Language, Elementary Grades	1924–1925	1–7
Frederick County, Md.	Course of Study in English	1921–1922	1–7
Hawaii Territory.....	Course of Study in Primary Grades and Course of Study in Language	1924	1–8
Highland Park, Mich.	Elementary Course of Study, Group II, Part I, Language Outlines	1923	K–6
Indianapolis, Ind. ...	Course of Study in English	1923	1–8
Jackson, Mich.	Course of Study in English	1923	1–6
Kansas City, Mo. ...	The Course of Study in English for the Elementary Schools	1923	K–7
Long Beach, Calif. ..	Course of Study in Language for the First Grade, and Language and Spelling for Second and Third Grades	1924	1–3
Lorain, Ohio.....	Course of Study for Elementary Schools	1923	1–6
Los Angeles, Calif. ..	Course of Study	1924–1925	K–6
Louisville, Ky.	A Tentative Course of Study in English	1920	K–8
Michigan State.....	Language Lessons, Bulletin No. 30	1923	1–6
Minnesota State.....	Curriculum for Elementary Schools	1923	1–8
Missouri State.....	Course of Study for the Elementary Schools	1924	1–8
Montana State.....	State Course of Study for City Elementary Schools	1924	1–8
New York State.....	Elementary Syllabus in English, Language and Literature, No. 725	1921	1–6
Norfolk, Va.	Course of Study for Elementary Schools	1923	K–6
North Carolina State	State Course of Study for Elementary Schools	1923	1–8
Oakland, Calif.	Course of Study in Language and Grammar for Special Limited Classes, No. 58	1923	2–6

† The courses are arranged alphabetically. All of the courses reported in this list were rated "Very Good" or above.

LANGUAGE AND GRAMMAR (*Continued*) †

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Oshkosh, Wis.	Course of Study in Primary English	1923	1–3
Philadelphia, Pa.	Course of Study in English	1917	1–8
Richmond, Va.	Course of Study in English, No. 17	1918	Elem. & JrH
River Rouge, Mich.	English for Elementary Grades		1–6
Saginaw, Mich.	Course of Study in Language and Spelling	1923	1–5
Santa Barbara, Calif.	Course of Study in English	1921	1–8
South Dakota State	Course of Study for the Elementary Schools	1922	1–8
Stoughton, Wis.	Language for First Grade		1
Trenton, N. J.	Elementary Course of Study in English, Literature and Spelling	1923	K–6
Virginia State	State Course of Study for Rural and Elementary Schools	1923	1–7
Washington State	A Course of Study in English for Use in the Elementary and Secondary Schools of Washington, Bulletin No. 37	1921	1–8

† The courses are arranged alphabetically. All of the courses reported in this list were rated "Very Good" or above.

LITERATURE

Course Issued By	*Title of Course*	*Date*	*Grades Included*
* Baltimore, Md.	Course of Study for Baltimore County Schools	1921	1–8
* Des Moines, Iowa	Course of Study in Reading and Literature	1924	K–6
Elizabeth, N. J.	Outline Courses of Study for Kindergarten and Elementary Grades	1924–1925	K–6
* Kansas City, Mo.	Course of Study in English	1923	K–7

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

LITERATURE (*Continued*)

Course Issued By	*Title of Course*	*Date*	*Grades Included*
* Los Angeles, Calif...	Course of Study	1924–1925	K–6
New York State....	Elementary Syllabus in English, Language and Literature, No. 725	1921	1–8
Norfolk, Va.....	Course of Study for Elementary Schools	1923	K–6
* North Carolina State	State Course of Study for Elementary Schools	1923	1–8
Okmulgee, Okla. ...	Course of Study and Project Plans	1922	1–6
* Virginia State.....	Course of Study for Rural and Elementary Schools	1923	1–7
Wisconsin State....	Course of Study for the Elementary Schools	1923	1–8

READING

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Arizona State Normal School, Flagstaff, Ariz.	Reading Methods		K–1
* Baltimore, Md. ...	Course of Study for Baltimore County Schools	1921	1–8
Berkeley, Calif. ...	Course of Study Monographs No. 10, Reading and Phonics	1924	K–6
Cliffside, N. J.	Cliffside Curriculum Studies	1924–1925	K–2
Connecticut State..	A Course of Study in Reading including Literature	1924	1–8
Des Moines, Iowa..	Course of Study in Reading and Literature	1924	K–6
* Elizabeth, N. J. ...	Outline Courses of Study for Kindergarten and Elementary Grades	1924–1925	K–6
Ironwood, Mich. ..	Elementary Course of Study	1922	1–6

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

READING (*Continued*)

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Jackson, Mich.	Course of Study in English	1923	1–6
* Kansas City, Mo...	The Course of Study in English	1923	K–7
* Los Angeles, Calif. .	Course of Study	1924–1925	K–6
Minnesota State....	Curriculum for Elementary Schools	1923	1–8
Montana State.....	State Course of Study for City Elementary Schools	1924	1–8
Newton, Iowa.....	Course of Study for the Elementary Schools	1924	1–6
Norfolk, Va.	Course of Study for Elementary Schools	1923	K–6
Okmulgee, Okla. ...	Course of Study and Project Plans	1922	1–3
* Richmond, Va.	Course of Study in English	1918	1–Jr
* St. Cloud, Minn. ..	Reading in the St. Cloud Public Schools	1924	1–6
Sioux City, Iowa...	Course of Study	1923–1924	1–3
Springfield, Ohio...	Courses of Study	1923	1–HS
* Trenton, N. J.	Reading and Literature	1924	K–6
* Western State Normal School, Kalamazoo, Mich. ...	Course of Study in Reading and Literature for Western State Normal Training Schools	1924	K–7

ELEMENTARY SCIENCE

Course Issued By	*Title of Course*	*Date*	*Grades Included*
Baltimore, Md. ...	Course of Study for Baltimore County Schools	1921	1–8
* Berkeley, Calif. ...	Course of Study Monographs No. 3, Nature Study	1921	K–6
* Detroit, Mich.	Course in Nature Study	1922	1–2
* Francis Parker School, Chicago, Ill.	The Course in Science Course of Study	1923	K–8
Okmulgee, Okla. ...	Course of Study and Project Plans	1922	1–3

* The courses are arranged alphabetically, those rated "Very Good" or above being marked with an asterisk (*).

Assignment

Select several of the foregoing courses of study and answer the following questions concerning each. Submit answers for at least two courses of study in writing.

Concerning the course of study as a whole:

Who made the course of study?
What method of determining objectives was used?
Does it include reviews of the essential elements?
Does it include tests and corrective material?
Does it contain provisions for individual differences?
Is it easy to read?
Are the references clear and exact?
Is the typography good?

Concerning the separate teaching units:

Under what main headings are the teaching units organized?
Do the units have a useful life purpose?
Do they reproduce the experiences of life as far as possible?
Do they utilize materials as they occur in life?
Do they involve a variety of direct sense experiences?
Do the pupils have an opportunity to participate in the planning of the activity?

FIFTY-FOURTH MEETING

DEFINITION OF TERMS USED IN THIS COURSE

Case Group — A case group is a distinguishable number of persons in a given locality having certain common characteristics.

Course of Study — A course of study is a subdivision of the curriculum in which the parts are sufficiently related to make a distinct unit.

Curriculum — The curriculum consists of the experiences that all the children are most likely to have in school.

Curriculum Committee — The curriculum committee is the group which actually produces the objectives and activities.

Direct Data — Direct data are facts assembled inductively by an investigator.

Grade Placement — Grade placement consists of assigning an activity to the grade in which it is most interesting, useful, and most nearly adapted to the capacities of the child.

Job Analysis — Job analysis consists of breaking up a job into its component elements to determine the exact steps in the process of training for that job.

Major Field of Life Activity — A major field of life activity is a fairly recognizable group of life activities, such as leisure, work, social activities, which make a natural unit.

Objective — An educational objective is a specific goal, useful in life, to be achieved by education.

Outcome — An outcome is the result, or end product, of a unit of school experiences.

Practice Material — Practice material consists of units of experience designed to correct the deficiencies discovered by tests.

Project — A project is a school enterprise originated by the children, engaged in wholeheartedly by them, and directed toward the achievement of their goal.

Project Curriculum — A project curriculum consists of experiences arising from the natural activities of children and developing in the direction of their widening interests.

School Activity — A school activity is a unit of school experience in which the pupil engages in order to attain a skill or knowledge or attitude.

Secondary Data — Secondary data are facts already in

existence used to determine objectives by one who did not discover them directly.

Social Documents — Social documents are published statements of public or semi-public agencies, such as political platforms.

Social Statistics — Social statistics are data which describe the habits or activities of people, such as the reports of the Census Bureau.

Subject — A subject is a present, generally recognized, formal school study, such as arithmetic.

Teaching Unit — A teaching unit is a unified school experience which the pupil has in the attainment of any one or a group of related purposes.

Test — A test is an exercise designed to determine whether the objectives have been achieved.

Assignment

The foregoing list was prepared by the author as a set of working definitions of terms used in discussing curriculum construction. The student is required to make a similar serviceable list for himself. This, of course, involves a review of the whole course but should not take more than two hours. The first reading of this book revealed certain special terms which are new or which have a particular application to curriculum making. As the student turns the pages of this book these terms will suggest themselves. Upon completing this course, it is important that he should have a clear understanding of its terminology. The student may interpret the terms in his own way so long as they fit into a coherent scheme of thinking. The foregoing list of definitions should be used after an original list has been made and then only for comparison.

FIFTY-FIFTH MEETING

A REVIEW OF THE PRINCIPLES DEVELOPED IN THIS COURSE

Composition of the Curriculum Committee

The Curriculum Committee should consist of the most capable and most industrious persons who can do the job.

It should include persons who have the authority to call upon many teachers for assistance at any step of the process of revision.

The chairman of the group should have some knowledge of the technique of curriculum making.

It should include the person who will be responsible for training teachers to carry on the new course of study.

It should include classroom teachers who will think in terms of actual conditions and who will help to design the new teaching units.

It should include principals and other supervisory officers who represent the administrative point of view.

Aim of Education

The aim of education is to help persons to do well those things which they most likely will need to do.

Selecting of Field for Study

All things being equal, the soundest approach to curriculum revision is through the major fields of life activity.

At the present stage of educational progress, it is still necessary to revise curricula with the formal subjects as a starting point.

A new alignment of school activities should parallel the major life activities.

Determining Objectives

A useful purpose is one which yields good results, one which makes some improvement in living.

The inclusion of any unit of teaching material is justifiable only if it points to the achievement of some specific useful purpose.

Objectives should be so specific as to define with some exactness the scope of the teaching unit to which it is related.

Objectives should be stated in terms of the child's goal.

As far as conditions permit, objectives should be determined by a procedure which is inductive as opposed to speculative and objective as opposed to personal. Such a procedure usually involves a quantitative treatment of the data. The most direct way to discover objectives is to make an analysis of the learner's needs.

The objectives of the elementary school should turn on an analysis of children's interests and activities.

The work of the grades beyond the elementary level should be dominated by social needs. The most fundamental needs must be met in the education of adolescents.

Analyses of newspapers and magazines should be used as a supplementary source of objectives and then only if certain cautions are observed.

Objectives determined by opinion are not as reliable as an objective study of the actual needs of the learner. When objective data are not available, competent opinion is superior to a personal selection of objectives.

Children's choices should determine the objectives in the fields which aim to develop good tastes or the ability to enjoy things.

The outcomes of project curricula may be used to determine objectives only when subjected to a reasonable process of selection and rejection.

The technique used in determining objectives should provide for the discovery of habits of living which are an improvement over the *status quo*.

Organizing the Objectives

The main headings should grow out of the objectives listed, that is, they should be determined inductively.

Such objectives should be eliminated from the final list as are (1) adequately attained outside of school; (2) beyond the capacity of the pupil; (3) relatively uninteresting; (4) relatively unimportant. (These steps are not necessary if they have been carried out earlier in the investigation.)

Objectives should be assigned to given grades by thoughtful teachers of experience and should be tentative. Later they should be readjusted to agree with the results of experience.

Planning Activities

The objective and the activity are the two indispensable elements of a printed teaching unit.

It is necessary to analyze a course of study, to select the elements which are fundamental, and to repeat them at appropriate intervals.

When the objectives of a course are stated clearly and specifically, it is possible to set up tests at intervals to determine whether the objectives have been achieved.

A teaching unit should reproduce life stiuations and utilize materials in the classroom as they occur in life.

A teaching unit should provide for much pupil activity and should involve a variety of direct sense experiences.

A teaching unit should bring pupils into informal friendly relations.

Assignment

The above statement of principles is the product of a review of the book. The student here is required to set down a series of principles which tentatively represents his curriculum-making creed. It is not assumed that the student's principles are the same as those of this book, nor that the emphasis of the book are the same as his. On completing this course, it is important that one shall work out a few statements of belief or policy to which one may readily refer. Incidentally, it is necessary to review the book or one's notes in order to work out a complete set of principles. The class discussion will consist of a defense of the principles arrived at by each student.

FIFTY-SIXTH MEETING

A CRITIQUE OF THE PRESENT STATUS OF CURRICULUM MAKING

Introductory

The process of systematic curriculum making is still in its infancy — it is hardly ten years old. The output of courses of study has been enormous and the product of individual study has been prolific. Much of the material, however, is fragmentary and much of it does not take all the conditioning factors into account. Many steps in the process have not yet been fully developed.

In order to arrive at an estimate of the present status of curriculum making, we will start with the assumption that a complete methodology should include, at least, the steps suggested in this course (see page 241). It is not intended to force a point of view on the reader, but rather to serve as

a point of departure for this discussion and to insure comprehensive criticism of the present technique of curriculum construction. Much of the criticism presented here has already been introduced incidentally. It is here assembled to make a complete critique and review.

Composition of the Curriculum Committee

The chief criticism of the curriculum-making groups which are at work is that they fail to include all the persons necessary to give a balanced view where so many variables are concerned. In our opinion, (1) the group should consist of the most capable and most industrious persons who can be found; (2) it should include persons who have the authority to call upon teachers for assistance in any step of the process; (3) the person who directs the group should have some expert knowledge of the technique of curriculum making; (4) the group should include a person who would be responsible for training teachers to carry out a new course of study; (5) the group should include classroom teachers who will think in terms of actual conditions and should render invaluable service in designing classroom activities; (6) it should include principals and other supervisory officers who represent the administrative point of view. The view represented by these conditions is that the most competent persons should be engaged in the work of curriculum making and that a balanced view be obtained by drawing on the representatives of the several branches of service which affect the curriculum.

Agreeing on the Definition of Education and the Curriculum

Curriculum committees plunge precipitously into the task of curriculum making without the preliminary clearing of ground so necessary to good, harmonious understanding.

Early in this book we have pointed out how differing points of view on the meaning of education and the curriculum lead to wide discrepancies in instructional material. Certain clear-cut issues should be discussed and the group should arrive at a decision. Too many courses of study are inconsistent in their parts. Too many unscrupulous curriculum makers are too ready to introduce a new shibboleth without taking the trouble to understand what its implications are and how it articulates with the point of view of the course of study as he conceives it. This is not a matter of theorizing with the honest worker. Once he sets down his principles, the sound scholar tries to adhere to them throughout.

In this connection the idea of usefulness which rightfully dominates the present curriculum-making movement needs to be clarified. There has been a tendency to limit the term useful to the daily, routine, bread-and-butter activities. To us, a useful purpose is one which has good results, one which makes some improvement in living. This holds for all the useful facets of expression, such as recreation, health, social living, esthetic life, and the enjoyment of the natural environment.

This book takes the position that the curriculum consists of all the experiences which all the children are most likely to have in school. This conception of the curriculum does not exclude the formal subjects, but it regards them as only one of several means used in the pursuit of school activity. We are certain, however, that the curriculum is not a statement of topics to be studied, read, or recited. It is an account of all that the children do in school to achieve certain educational ends.

Stating One's Position on Important Issues

The fundamental principles are still in the process of formulation; but there are some unnecessary cleavages in opinion. For example, there is really no antagonism between

an analysis of the interests and activities of children and an analysis of social needs as a basis of curriculum construction. They are not mutually exclusive. During the early, preadolescent period in the learning career, the emphasis should be on child nature. During the adolescent period, the emphasis should be on social needs.

The view that the elementary grades should be dominated by child behavior does not contradict the principle that usefulness shall govern education. The child engages in many practical and useful pursuits in the home. This view does not entirely exclude objectives which relate to adult experience. Much that affects the child also affects the adult. Furthermore, it is not necessary to exclude certain, important objectives ascertained by an analysis of social needs, usually having an adult emphasis. A selection from such objectives, however, should be made entirely on the basis of their appeal to children.

It is interesting that those who are conducting activity curricula, purporting to begin with child nature, carry on useful life activities extensively.

Selecting a Field for Study

The problem here for the curriculum maker is to make up his mind whether he wishes to begin with a formal school subject or with a major branch of life. There is almost unanimous agreement among leaders in curriculum making that revision should be made by studying the large fields of human activity. The practical technician, however, will be obliged in most cases to proceed with the reconstruction of the formal subjects at present. A curriculum ultimately must involve some organization of the school activities. Without it planning and discussion of school life is impossible. The new alignment of educational activities will probably parallel the major life activities.

Agreeing on the Meaning of an Objective

There is much confusion in the minds of the readers of the literature of curriculum making concerning the term objective. It was pointed out that an objective is a rather specific and useful goal of education. It is the result of any unit of instruction. Frequently, objectives are so general as to be no improvement over what formerly were known as aims. They do not point toward the development of specific abilities. They do not anticipate the formation of fairly specific habits. Sometimes those who formulate them fail to realize that an objective is a specific skill or fact which is usable in life. It is the learner's purpose always, — not the teacher's. The objectives of a curriculum, therefore, should be uniformly expressed in terms of the learner's goal. It should be remembered that an outcome and an objective are not always the same thing. The word outcome is used by those who do not determine their goals in advance. They merely state the end-products of activity initiated by pupils. The word objective implies that one has determined his goals before planning school activities. Listing objectives under psychological headings such as knowledge, skills, attitudes, and ideals has no special advantage because this organization does not function in the teaching procedure.

Determining the Objectives of Education

The specific, usable abilities to be developed in school are determined by an analysis of the major life activities. We have already pointed out that at the present time five distinct ways of carrying on the analysis have developed. Earlier we gave a detailed critical evaluation of each of these methods.

First, we considered the method of determining objectives by analysis of children's activities, interests, or questions.

In this connection, it was proposed that the elementary schools should be governed by children's interests and activities. The chief applications of this method involving a quantitative procedure have been in the fields of reading and elementary science. The assumption here is that the behavior of the child is the best guide to the most interesting and most appropriate school activities for children. It was pointed out that this does not necessarily exclude certain useful activities and perhaps certain adult activities. According to this method, we make a careful analysis of child life, observing all the conditions of an inductive procedure, and produce a body of educational goals which do not deprive the child of the opportunity of engaging in natural activities.

We analyzed project curricula to determine educational objectives. These curricula consist of records of the free activities and experiences of children as evolved in the classroom. These curricula yield outcomes which are not really objectives in the sense that we have been using the term, namely, educational goals determined in advance. When these outcomes are subjected to a rigorous process of selection and rejection, we will very likely discover some very important, usable goals for the elementary grades.

Second, we consider the method of analyzing the learner's actual needs, which includes the procedure proposed by Dr. Snedden to discover the needs of a homogeneous group and the analysis of occupations. The application of this method when rigorously pursued involves a great cost in time, money, and labor. Its emphasis is upon the needs of life as distinguished from the natural behavior of children. In the long run it yields many goals which any child might normally set up. It is especially applicable to the curriculum of the

grades beyond the elementary level. The careful comparison of present habits and certain standards of behavior, which is necessary for the discovery of needs, is frequently neglected. In fact, we usually have a study of the present activities of the people. What people ought to do as opposed to what they now do is determined only in a few studies.

Third, we considered the method of analyzing data describing the needs of the people. Such data may be found in newspapers, magazines, surveys, documents, and books. It is a question whether newspapers and magazines give a sufficiently true picture of life to make them reliable sources of objectives. At best, they are a partial source of objectives and, even then, only if used intelligently. Secondary data, including books, vary in accuracy and reliability and require the investigator to make a careful check. Books may be nothing more than formal statements of opinion.

Fourth, we considered the method of determining objectives by analyzing the opinions of competent persons. This is hardly as reliable as an objective study of the actual needs of the learner. When objective data are not available, the opinion of competent persons is to be preferred to a subjective selection of educational goals. It should be remembered, however, that when opinion is resorted to exclusively, there is no assurance that the important objectives will be included, that the judges know what is most useful, and that the data are not biased.

Fifth, we considered the method of determining objectives by analyzing existing curriculum materials. An unsystematic collection of objectives from present practice cannot be very reliable. When care is exercised in planning the mode of selection, the results are an improvement over a personal arbitrary choice. A collection of the most common objectives now in use is not adequate.

Critique of the Methods of Determining Objectives

We made a summary of existing, available studies to determine objectives and pointed out that we are not yet convinced that we have evolved a final technique which may be recommended for general adoption. In quantity, we have produced an abundance of studies. In quality, we are forced to admit that we are yet in the primitive stage of the *science* of curriculum making. There are a number of very fine studies; but on the whole, the products of the curriculum-making movement lack completeness, coherence, and a proper handling of all the variables. We indicated that some methods are, for the present, most appropriate under certain circumstances. We hazarded the opinion that the following methods are most reliable: direct analysis of the learner's needs for curricula above the elementary school level; the method of quantitative analysis of children's activity on the elementary level; the method of job analysis for vocational curricula.

It was pointed out that each curriculum-making group would have to determine its own method on the basis of its own criteria, its own system of relative values. We proposed several criteria and indicated that all but one of them have been generally recognized by curriculum investigators. Not enough attention has been given to the discovery of objectives which result in an improvement over present living.

Determining the Nature of a School Activity

The new curriculum involves not only a radical improvement in the method of determining objectives but also a change in the nature of school activity. The leaders are agreed that the new curriculum shall consist of activities or

experiences, but their exact nature has not been thoroughly determined.

The theory of activity is developing in response to demands made by social needs, the nature of the child, and the laws of learning. The experiences which children should have in school are being planned in detail for publication in courses of study. The latter are becoming descriptions of things to be done by pupils and teacher rather than outlines of topics to be studied. The formal subjects are only one of several elements that enter into the experiences of pupils in school.

The Qualities of a Good Teaching Unit

The qualities of a good teaching unit depend upon the factors which enter into the nature of school activity. They are discovered most effectively by analyzing many teaching units. In practical curriculum making a statement of the qualities of a good teaching unit serves as guide in composing new units and as a check on the units already produced. Our analysis yielded several qualities of a good teaching unit which we set down tentatively. It should reproduce life situations and utilize materials in the classroom as they occur in life. It should include much pupil activity and involve a variety of direct sense experiences. The pupils should be brought into friendly, informal relations.

The Form of the Teaching Unit

There is at the present time no tendency toward a generally accepted outline of a teaching unit. Every unit should contain, at least, an objective and a description of the school activity. The printed course of study appears in a variety of forms: informal descriptions of the school activities; combined textbook and lesson plan; material arranged in parallel columns; and an organized statement of the objective, ac-

tivity, and equipment. The most effective presentation cannot be determined without getting the opinion of teachers on the appearance and readability of the several forms.

Introducing Sufficient Repetition to Insure Permanence of Learning

Although there have been several fine textbooks which embody this psychological principle, there has been no tendency to apply this principle systematically in curriculum making. After a course of study is complete, it is necessary to analyze it in order to select the elements that are fundamental and to repeat them at appropriate intervals. It is obvious that a complete program of activities must not neglect to include those units which involve practice.

Formulating Tests

Only a few printed curricula include tests and sample remedial materials. Since they form a part of the pupil's school experience, they properly belong in the curriculum. It should not be difficult to test the pupils' mastery of the objectives of a course of study if the objectives are given specifically. The curriculum maker might wisely borrow the techniques of testing which have been developed by the specialists. Primarily, the tests are a part of the learning procedure, designed to discover whether further instruction or practice is necessary. Similarly, the practice material designed to correct the deficiencies are a part of the learning procedure and should be included in the printed curriculum.

Adapting the Curriculum to Individual Differences

A variety of methods of adapting instruction to individual differences are being developed in public and private schools; but in very few cases have they been presented in printed

courses of study for the guidance of teachers. The problem for the curriculum maker is to design diverse experiences for the needs of different individuals or groups. Individual instruction is not very common in America and therefore the necessary printed materials are rare in public schools. Ability grouping is becoming common and several courses of study have appeared which indicate differences in kind or amount of instruction for the several groups. A certain number of fundamental needs are the same for all normal persons and call for fairly common materials of instruction.

Conclusion

We have presented here an outline of the important steps in the process of curriculum making and indicated some of the limitations in the ways in which these steps are being carried out at the present time. We have pointed out that few studies comprehend all of the steps in the complete process of curriculum construction, from which we infer that future projects will have to be more comprehensive in scope. The fundamental principles are still in the process of formulation and there is still considerable unnecessary cleavage in opinion on important issues. It appears that it will be necessary for some time to revise curricula by reconstructing the existing formal school subjects. There is still much confusion concerning the meaning and form of an objective. We have considered in great detail the several methods of determining the objectives of education, pointing out the advantages and limitations of several methods and proposing a tentative opinion of the relative validity of these methods. We indicated that the time is not yet ripe to set up one technique of determining objectives.

In discussing the nature of a school activity, it was our purpose to point out that the greatest deficiency in present curriculum making is the lack of understanding of the

nature of activity and translation of it into an acceptable teaching unit.

Finally, we pointed out that very little has been done in systematic curriculum making to introduce sufficient repetition to insure permanence of learning, to formulate tests to be given at regular intervals, to adapt the curriculum to individual differences, and to organize activities by grades on the basis of experience in the classroom. It should be clear that we have not yet reached the peak of production of curriculum material and that only by maintaining a consistently abundant output of curriculum material can we hope for any permanent changes in the character of the American public school curriculum.

Assignment

Make an outline of the above critique substituting your own point of view wherever you differ from that set forth here.

FIFTY-SEVENTH MEETING

SUMMARIZING THE LITERATURE IN ONE'S FIELD

Choose a subject in which you are especially interested. Read all the curriculum investigations made in that field that you have time for and make a brief report of each investigation, giving the following: (1) the purpose of the investigation; (2) the method of the investigation; (3) the results of the investigation; and (4) a brief criticism of the investigation. By this time you have very likely accumulated quite a number of summaries of curriculum studies in your field in connection with previous assignments. Obviously it will not be necessary for you to reread these

investigations. At this point, it is only necessary to assemble them as one unit.

In a field in which extensive work has been done, it will probably take a long time to cover all of the curriculum investigations. However, one could hardly be expected to have done the work of this course adequately without at least planning to set aside time to read all the material in one's field. Perhaps the student could save some time by reading the already prepared summaries of the studies in his field published in the *Yearbooks of the Department of Superintendence*, in Charters' *Curriculum Construction*, in Curtis' *Investigation in the Teaching of Science*, and in some other works. The class discussion will be based upon five or ten minute oral reports by the students. The oral report should be general, showing (1) the method or methods of curriculum construction which have evolved; (2) in what branch of curriculum construction the strongest work has been done; (3) what suggestions the field offers to other fields; (4) any other general tendency revealed by a study of the investigations.

FIFTY-EIGHTH MEETING

OUTLINING A PLAN OF CURRICULUM REVISION

The student should now be prepared to propose an outline of a practical plan of curriculum revision in his field. This task is the culmination of the work of the entire course. It is the final test of what the student has gotten out of the course. Here is an opportunity to show ingenuity and independence. It is not at all intended that he shall follow the plan proposed in the course unless he is in thorough sympathy with it. Indeed, it is one of the chief purposes

of the course to stimulate new ideas and new plans. Only in this way can improvement in curriculum making come about. If you discovered defects in the plans proposed in this course and elsewhere, this is your opportunity to introduce refinements which will correct these defects.

It is difficult to say just how detailed the outline should be. The test of completeness will be the clearness with which the members of the class comprehend exactly what the author of the plan proposes to do. The class discussion will consist of an oral report of the plan by the student and a criticism of the plan by the members of the class.

PART X

GENERAL BIBLIOGRAPHY OF CURRICULUM MAKING

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